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Original Contributions.

A GOLD BANDAGE AS A MEANS OF SAVING TEETH.

BY DR. J. F. ADAMS, WORCESTER, READ BEFORE THE UNION MEETING OF THE NEW ENGLAND AND CONN. VALLEY DENTAL SOCIETIES, AT WORCESTER,
OCT. 23-25, 1895.

This device has not had the test of long use to establish its value, nor has it been applied in a large number of cases, but from the experience I have had of its practical working I feel warranted in offering it to the profession, believing that it will prove to be a valuable addition to the resources of dental art.

The object of the "gold bandage" is stated in the program—the saving of teeth. It is not designed for use where the conditions are favorable to success with the ordinary operation of filling, but it is for the binding up of poor, weak, unfortunate teeth, bicuspids especially, which we all meet with to our sorrow and find exceedingly difficult or impossible to save permanently by any of the methods hitherto known and practiced.

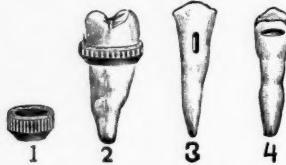
It matters not in the present case what may be the cause or causes leading to this condition of the teeth, whether it be inherent depravity or the destructive influence of vitiated secretions with which they are surrounded; we know too well that the condition exists and that such a tooth may be filled with the utmost care, with any of the materials at our command, and in a few years we find a recurrence of decay at the most inaccessible margins.

We are then compelled either to remove the filling and begin anew, or to resort to patching, under conditions less favorable than at first and with less and less hope of success at each succeeding attempt. To this is added later the complication of an exposed pulp with all its attendant troubles, and finally the tooth

breaks down and the martyr receives the reward of a golden crown, a poor recompense for the many crosses which have been borne by operator and patient before it is attained.

Now if by any means we can take such teeth before destruction has overwhelmed them, bind up their wounds, give them present comfort, secure them immunity from future attacks of disease, and insure to them long and useful lives, then we shall have made a decided advance in our art. Perhaps I am oversanguine, but it is my hope and belief that the gold bandage will enable us to accomplish this result. So much by way of preface, I will now give you my mode of procedure.

The bandage, as its name implies, is designed to envelop the tooth, covering all those parts where decay is liable to occur, as well as those which have already been attacked, existing cavities having first been filled with oxyphosphate cement. It is thus



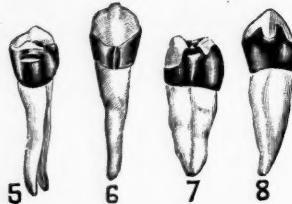
prophylactic as well as remedial. Let us take for example a superior bicuspid, though the bandage may be used on any of the anterior teeth, and if the patient has a large mouth it might be applied to the first molar, but the bicuspids are the teeth for which it will oftenest be demanded. If the tooth be in close contact with its neighbors I first pass a No. 00 separating file between them, which makes just space enough to admit the bandage without any crowding of the teeth, and then introduce a wedge on either side and separate freely. When this is accomplished I slip a rubber ring (Fig. 1) over the tooth, allowing it to impinge slightly on the gum to force it away from the neck of the tooth. The ring is made from a short section of rubber tubing, which is trimmed at one end to an edge (Fig. 2) by placing it on a mandrel and pressing sand-paper against it while it is revolving in the hand-piece of the engine. Common, cheap tubing is best for the purpose, as pure rubber is too soft for the sand-paper to act upon. Let me say here that this is not the only value these rings have.

They may be applied in most cases to roots, preparatory to crown-setting, and will open up around the stump so that the operator can see what he is doing, while trimming it to receive the band or fitting the porcelain to it. They are worn with very slight discomfort and produce no soreness, and are kept on for a day or two, when the tooth is ready for the operation.

I drill a slot on its labial face (Fig. 3) one-eighth of an inch, or perhaps less, in length, starting very slightly above the gum-line, one-sixteenth of an inch in width, and as deep as it is safe to go, making an undercut with a wheel or inverted cone bur, and to insure a neat operation the lower end of the slot, this being a superior bicuspid, should be carefully squared, otherwise it will be apparent where the ends of the bandage are connected. Next with a knife-edged disc I cut a notch on the palatal face of the tooth near the cusp (Fig. 4) and looking toward the gum, so as to give a good firm rest for the gold which is to be fitted into it. I now apply the rubber-dam and prepare the cavities. The only excavating which is demanded is simply what is necessary for the removal of the decay, as the shape of the cavity is of no consequence. This is an important feature of the operation and one that will commend itself to the patient, for in many cases a large share of the pain, which would be unavoidable in preparing a cavity for the reception of a metallic filling, is obviated. I fill with oxyphosphate, restoring the contour, and wait for the cement to set, then smooth with polishing strips and remove the dam.

I then take an impression and make a fusible metal cast upon which to form the bandage. This is made of pure gold, 34 gauge. When it is fitted approximately to the cast I try it in the mouth, place it as nearly as possible in the proper position, and while holding it firmly between the thumb and finger I take a burnisher and press the gold into the notch in the palatal face of the tooth (Fig. 5), so that it will exactly fit and fill it. Then I remove the bandage and fill up the depression corresponding to the notch with 22 k. gold solder, return to the tooth and burnish it down to a fit. I cut the ends so that they will fit into the slot, leaving them just long enough to reach the bottom. Then remove and finish. The part which comes next to the gum should be trimmed to a knife edge and made perfectly smooth. I next give the gold

a final annealing and it is ready to set. After again applying the dam and drying the tooth, I cover the inner surface of the bandage with a thin coating of soft cement, placing it in position and secure with a ligature wound several times around, and while the cement is still soft burnish perfectly to the tooth, place the ends into the slot, forcing them up against the side-walls, and fill the slot with gold (Fig. 6). The fitting of the tongue or flap which is to cover the crown surface may be done as a separate operation. If the decay included only one proximal surface and the fissure in the crown, there will be only one flap, which will cover the entire length of the fissure. I drill a small hole at the further extremity of the fissure, apply fresh cement to the under side of the flap, burnish it down, press the point into the hole and fill that with gold. If the original cavity included both proximal surfaces and the crown, you have two flaps meeting in the middle of the crown where the anchorage is made.



When the tooth is exposed to view I leave as much of the labial surface uncovered as is consistent with the strength of the bandage. After smoothing and polishing, and securing a correct occlusion by grinding away any point of the opposing tooth that may strike the gold, the operation is complete (Fig. 7).

Another class of cases to which the bandage is well adapted is where there has been considerable recession of the gums, and the whole surface of the exposed dentine has become softened by decay. In such cases I would remove the softened tissue with scrapers and coarse polishing strips, wipe over the surface with a strong solution of nitrate of silver, and apply the bandage.

In fact, the first case which I treated was a cuspid tooth standing by itself. The patient wore a partial gold plate which had abraded the palatal surface, while the labial surface was softened by disease. The bandage has been worn upon this tooth since February,

1894, and seems to have protected it perfectly. In treating cuspid and incisors, instead of cutting the notch as described, I drill a hole into the palatal surface, trim the bandage to a point at that spot, press it into the hole and secure it with a gold filling (Fig. 8).

The only apprehension I have had in regard to the treatment has been of a possible irritation of the gums from contact with the gold, but thus far I have seen almost no trouble of that sort, far less than comes from the setting of gold crowns. The gold used is so thin and soft that perfect adaptation can be secured and danger of irritation is reduced to a minimum. The operation may seem somewhat complicated, but I am sure that it can be successfully performed by any good operator, and after a little practice it need not occupy more than two hours and a half, and perhaps less time.

As a result you have a covering of indestructible material, securely anchored, perfectly fitted and united by a cement lining to the tooth, leaving no loop-holes for microbes or other destructive agents to enter. The whole a source of strength instead of a source of weakness. Why should it not be permanent?

OPPORTUNITIES OF MECHANICAL DENTISTRY NEGLECTED THOROUGH IGNORANCE OR INDIFFERENCE.

BY DR. W. H. RIDER, DANBURY, CONN., READ BEFORE THE UNION MEETING OF THE NEW ENGLAND AND CONN. VALLEY DENTAL SOCIETIES, AT WORCESTER,
OCT. 23-25, 1895.

I shall plunge into my subject at once by making the statement that prosthetic dentistry is sadly if not entirely neglected by the better class of practitioners. For this there are many good reasons, but no excusable ones, for we must admit that nothing can excuse an operator for being unable or refusing to give his patients advice and attention in all branches of the art of dentistry. If so, then does his "sheepskin" lie, for he is not "qualified to practice dentistry in all its branches," as the document asserts.

The primary cause of this condition, others following in an easily traceable order, was undoubtedly the introduction of plas-

tic materials, and I firmly believe that they are a curse to the race, rich and poor alike, but to the poor especially. You may say that the many are benefitted at the expense of the few by being able to obtain, at a price compatible with their means, artificial substitutes for lost dentures. I assert that but few are benefitted, and not at the expense of many, but of thousands. What are the facts? In the first place, all close observers admit that the contact of any plate of the plastic materials with the mucous membrane, especially that most generally used, rubber, is detrimental in many cases to the contiguous parts and often to the general health. I will not go so far as to say that such plates are the cause of throat troubles, nasal and other catarrhs, dyspepsia, etc., but there cannot be the slightest doubt that they aggravate all such disturbances.

In the second place, plastic materials are a curse to all on account of their very cheapness. It costs much more to save the natural teeth than it does to replace them with an artificial substitute; consequently, thousands are sacrificing not only poor but perfectly sound teeth. The consequences are far-reaching, both as to practitioners and especially the poorer class of patients. Among the latter the idea has long been prevalent, and is rapidly becoming an accepted fact, that "it does not pay to have teeth filled; false ones are much cheaper and don't ache." As a consequence, therefore, going from bad to worse, it is no longer necessary to teach children to care for their teeth by brushing, unless it be the anterior ones for looks sake only; so far as the usefulness of the organ is concerned, they are not worth the trouble of saving, it is only a waste of time, and it would be preposterous to spend any money on them if the parents are poor.

Such is the present condition of affairs with the patient; how is it with the operator and how far are we responsible? The same cause has operated in both cases, and by following the same chain of circumstances we find the reason of our best practitioners having little or nothing to do with the prosthetic branch of our science. The mistake was made in the beginning, when a few of our well-meaning but short-sighted men accepted and helped to introduce rubber-work. The well known "camel" got his head into our tent at that time and now, verily, hath he kicked us out bodily. Where are we now? Following closely on

the heels of cheap plates came cheap dentists, the two naturally going together, bringing with them that horrible curse to the race, cheap work.

Assuredly, we are most thoroughly handicapped in our efforts to elevate the profession, the cheap dentist doing more in one day to lower us in the eyes of the many than we can do in a year among the few. Our few talk but little of our successful efforts; their many do little but talk of their outrageous failures; and yet, such is human nature that, without discretion, they condemn the whole. How far are we responsible for all this? It is certainly no excuse for us to relegate to poor workmen all plate-work. The curse of plastic-work exhibits itself in us, to put it tersely, in that we have before us this result—our young men of real merit entertain anything but a favorable opinion of prosthetic dentistry; many look upon it as beneath them, as disreputable. Most regard it as undesirable, something to be avoided if possible, and if they can live without it they do so. Can we blame them? No, emphatically. But if we slight all but the agreeable operations what will become of our patients?

I do not presume to offer or even suggest a remedy, but simply quote Dr. Austin's remarks, made nearly twenty years ago, on this subject, from Harris' "Principles and Practice." "In prosthetic dentistry, swaged work is the patrician element; plastic work, the plebian. When the latter runs riot, without the conservative influence of the former, the power of the people becomes a power for evil. This is precisely the danger which now threatens dentistry, in the abuse of certain most valuable processes and materials. Facility of construction and cheapness of material have encouraged a style of practice in the highest degree detrimental to the profession. If such practice is inseparable from plastic work, it should be unhesitatingly abandoned by everyone who holds the honor of dentistry dear to him."

Discussion. Dr. L. C. Taylor. Almost everyone has observed the bad effects of rubber plates and much of this is caused by slovenly methods. No one will doubt that rubber has been abused, but I very much question that it has been a curse.

Dr. Geo. A. Maxfield. Often after inserting rubber plates the patient will return in a few days with sore spots which resemble "canker sores." An excellent thing to apply to these is trichlor-

acetic acid, saturated solution. The gum heals rapidly after the application.

Dr. Fillebrown. Most dentists do give attention to mechanical dentistry. Two-thirds of the people would be "gumming" it the greater part of their lives if it were not for rubber plates. It may occasionally be an irritant, but I have seen the same effects from a gold plate, not only on the edges, but all over the mouth. It is the ill-adjusted plates and not the material that causes the irritation.

Dr. E. B. Davis. Gold is better than rubber because there is a good circulation under it, which there is not under rubber. In spite of this, however, I have seen as good results with rubber as with gold.

PERPLEXING PROBLEMS IN THE TREATMENT OF CHILDREN'S TEETH.

BY DR. MARION L. WOODWARD, BOSTON, READ BEFORE THE UNION MEETING OF THE NEW ENGLAND AND CONN. VALLEY DENTAL SOCIETIES, AT WORCESTER,
OCT. 23-25, 1895.

This paper was undertaken with the intention only of presenting matter for discussion, and it is hoped that all will take part, for benefit can come in this way only. The oft-quoted saying of Henry Ward Beecher, when asked about a child's education, that it should begin with its grandparents, is considered pertinent with regard to the teeth. Begin now with the rising generation; the public schools are a good field in which to disseminate the necessary knowledge.

The habit of overbrushing the teeth is as detrimental as a lack of care, for frequently a deep furrow is made by the brush across the labial surface.

A cause of caries in deciduous teeth may be failure to exercise them, as children of to-day are given much soft food, but when absorption begins the edges of the roots are jagged and sharp, and while the calcification of the permanent roots is incomplete they cannot stand much pressure.

The roots of the deciduous set are considered to have much to do with giving form to the crowns of the permanent teeth, but I believe fully as much irregularity is caused by extracting too late as too early.

Cleanliness and the arrest of decay by the judicious use of nitrate of silver are also important factors.

Discussion. Dr. D. M. Clapp. It seems to me that the problems are increasing daily, as children's teeth are not nearly so good as they were some years ago. Dr. Atkinson used to advocate making separations between these teeth when they needed filling, and this is doubtless a good practice. I believe that cement with amalgam is good, but not for contour work, and gutta-percha will often last a long time and do good service.

Dr. Geo. A. Maxfield. I used to think that the parents were wholly to blame for the behavior of their children in the dental chair, but since I have had a little boy of my own I have entirely changed my belief. I seldom extract a deciduous tooth before the time it should be lost. In all operations as little pain as possible should be inflicted, for the dread which many people have of the dentist's chair is the result of vivid impressions received in childhood. I have had excellent results in the use of nitrate of silver. When a child presents, suffering from an exposed pulp, an application of the nitrate of silver, or a pellet of cotton moistened with creosote and then dipped into powdered cocaine and applied in the cavity, will generally quiet the pain at once. In most cases the pulp dies in a few days, as the children are not brought to us until after they have suffered some time. After the death of the pulp I remove all I can, moisten a pellet of cotton with eucalyptol and iodoform and place it in pulp chamber, then fill the cavity with cement, gutta-percha or amalgam. Then with a small drill I bore through to the pulp-chamber on the buccal side of the tooth just under the free margin of the gum, which will allow all gases to escape and prevent the formation of an abscess.

GUM ACACIA IN USE WITH PLASTER.—The addition of gum acacia to plaster when used either for casting models or taking impressions, is advocated by Mr. E. Lloyd Williams. When the plaster is used for the purpose of obtaining an impression, he adds one ounce of mucilago acacia (B. P.) to a pint of alum solution; when, however, the plaster is used for casting models slightly less is required. The addition of the gum acacia is said to render the plaster less pliable and more dense, and gives it at the same time a silky look.
—*Jour. of Brit. Dent. Ass'n.*

FAILURES AND CAUSES.

BY C. W. STRANG, BRIDGEPORT, CONN., READ BEFORE THE UNION MEETING OF THE NEW ENGLAND AND CONN. VALLEY DENTAL SOCIETIES, AT WORCESTER,
OCT. 23-25, 1895.

We regard as indispensable to the highest achievements and greatest success, a genuine love for one's work or calling, and he who chooses dentistry as a vocation, without regard to his tastes, adaptation, moral, mental or physical endowments, thinking only of the shekels that may fall into his palm, begins the race heavily handicapped, and with little uncertainty we may predict what will be the general results of such a choice. These, however, are not the men who assume the cares and burdens incident to dental society work, nor indeed do they contribute materially to swell the number of those who attend our meetings.

How can I confer the greatest benefits upon my patients? How can I permanently preserve their teeth? How can I inflict the least pain without compromising the standard of my operations? These are some of the all-absorbing, the oft-repeated, the ever-present queries in the mind of the ambitious and conscientious operator.

With only a passing reference to those failures caused by a vitiated condition of the secretions of the oral cavity, as the result of impaired health or disease; conditions under which all classes and kinds of dental operations are undermined and destroyed, causing failures for which the dentist is in no way responsible, we pause to notice some for which he may justly be held accountable. In the average cases of children, where all has been given into his care and he is trusted to do that which in his judgment is best and ought to be done, it is but reasonable to expect and even demand satisfactory results.

We are thus led to ask, Are we as thorough, systematic and painstaking in our preliminary examinations as we should be? If so, then even in a well-regulated office, where system and order prevail, it is frequently at an expenditure of time, patience, strength and vital force, when we are least prepared or able to perform this service. It would be far better to decline all responsibility than to assume it and not be faithful in the performance of our duty. An examination to be of value must be thorough, and when we consider how much of the future comfort and well-being

of our patients depends upon us, what right have we to do otherwise than institute the most rigid care in this respect? Then let every defective spot be located and explored, for only when we have fully acquainted ourselves with all existing conditions are we prepared to proceed intelligently in the treatment of the case. To the hasty glance and the guess that everything is all right may be charged incalculable mischief and irreparable loss, and while this method may be satisfactory to some, and particularly gratifying to timid children, the more discerning will seek the counsel and services of the more painstaking operator.

Placing great emphasis upon the importance of thoroughness in this first part of our duties, we pass to what seems naturally to follow. Although much of the prematurely impaired usefulness of the teeth, and unhealthy conditions generally of the mouth, have their origin in foreign deposits, do we systematically and patiently labor to keep the teeth free from these deposits? If we are lax in our methods, our patients will very likely be careless and negligent in theirs, while persistent efforts on our part along the lines of cleanliness will usually secure the co-operation of the majority of those who regularly seek our services, and under this regime pyorrhea alveolaris will rarely develop to worry and perplex us. And if by scrupulous care we shall succeed in keeping healthy the mouths of those of our patients who have passed from childhood to middle age under our care, they will certainly appreciate it and speak of it to their friends. To the young men of our profession we would say that too much importance cannot be attached to this part of our work.

A very general impression prevails that when a tooth has been filled with gold the best has been done to meet the demands for service and durability. For the most part this is true, and yet of the total of failures of fillings of various kinds which come under our notice a very considerable number fall under the head of gold operations. Again we question, Are we not striving to perform, with the various kinds of mallets, practical impossibilities? Even though cavities are prepared with the idea that the gold is to be packed by mallet force, will not frequent examinations during the progress of the operation along cavity walls and borders convince us that a more perfectly adapted filling can be made if a reasonable amount of hand-pressure with proper instruments be

employed? Cohesive gold is carried only in a line with the force applied, and there are few cavities so located that it can be perfectly built against all the surrounding walls by mallet force alone; hence come so many gold fillings that are not really the ideals of perfection they may at first appear to be, causing the failures that in process of time become apparent.

Again, how frequently do we invite failure when we permit our better judgment to be overruled by our pride or ambition, stimulated by the fancies or notions of our patients, and so make prolonged operations upon teeth that have long been pulpless, and are weakened and partially disintegrated. We assist in the destruction by introducing well-condensed gold fillings, only too soon to see the objects of our care crumble away, greatly to our disappointment and chagrin. Far better temporize with the plastics, sacrificing as little tooth structure as possible.

In the care of children's teeth, and indeed with poorly organized teeth of patients of all ages, we are very generally agreed that the best results are obtained by the use of tin or the plastics. While, as a rule, plastic fillings must be frequently repaired or replaced, we do not regard them as failures, for the decay has been stopped, the teeth preserved, and comfort secured, yet we sigh for relief from the necessity of these frequent repairs.

During the last seven years we have very materially reduced the demands for these repairs by using a combination of amalgam and oxyphosphate, in cavities not specially prominent, and it is steadily growing in favor because of its excellent record as a preserver of tooth structure. When the cavity is prepared and the dam in place, select a matrix, a piece of file will do, then put enough filings of amalgam in a mortar to fill the cavity and make plastic with mercury; add to this one-quarter to one-third of phosphate cement powder and grind together into a dry powder; then put on a glass slab, add the liquid, make into a stiff ball and put into the cavity quickly. The cement sets at once, but the amalgam remains plastic for a little while longer.

When properly manipulated this filling withstands the wear of mastication about as well as amalgam and far better than tin. It adheres to the cavity walls and borders equal to oxyphosphate, but unlike the latter it is not porous and does not become impregnated with the fluids of the mouth. It does not disintegrate at

or below the gum margin. It is unshrinkable and in no case have we found tooth structure stained by it. One word of caution—it cannot be successfully used in the presence of moisture.

PIANO-WIRE BROACHES FOR ROOT-CANALS.

By J. H. WOOLLEY, D. D. S., CHICAGO.

In the treatment of all pulpless teeth I deem it easier, and the operation more successful when finished, to cut away the teeth sufficiently to get a full view of the pulp-chamber and approaches to the pulp-canals. With piano-wire, from which broaches can be made, the operator can explore and reach the apical foramen without endangering the sides of the root, which he would be apt to do with drills. Engines drills are not under as complete control as broaches, and are objectionable because when the roots are curved near the apex, the drill, instead of following the abrupt curve, will pass through its angle. In using a broach a delicate sense of touch and a deftness of hand are required. Broaches made of piano-wire are superior to any others, and in penetrating the pulp-canals the best results are obtained when the broach is not filed too small. It should be left large enough to give sufficient strength throughout to force it along the canal, but wherever it binds it should be filed.

INFECTION THROUGH THE TONSILS.—We have already published a reference to Professor Dieulafoy's communication upon the entrance of the tubercle bacillus through the tonsil. It seems that other constitutional diseases, besides tuberculosis, may originate in the same way; for instance, in such conditions as osteomyelitis and suppurative periostitis the micro-organisms found in the bone affection are the same as found in the tonsil. The following conclusions should be interesting to the Dentist:—(1) The tonsils may constitute a gate of entrance for pyogenic organisms, even in the absence of ulcers or diphtheritic lesions of the mucous membrane. (2) This role of the tonsils in the aetiology of osteomyelitis and various other suppurations is probably more important than that of the mucous membranes of the intestine and respiratory tract. The inference from these observations is that cleanliness and care of the mouth and pharynx are of great importance as a means of preventing certain diseases, especially acute suppurating osteomyelitis.—*Brit. Jour. Dent. Sc.*

Digests.

The Dental Record for November, 1895.

"NEURALGIA," by H. W. Turner; read before the Students' Society of the Dental Hospital of London. The first question that confronts us is:—What is Neuralgia? In it pain is the most important and prominent symptom. Some say that it is a disease in itself, others that it is only the symptom of some other disease. Some say that lesions of the nerve trunk occur, but from investigations that have been made there have been found in the neurilemma, medulla and axis cylinder of the nerve, granular deposits, but in only a very few cases have there been found any central lesions. Neuralgia may be defined as a disease of the nervous system, in which pain is the prominent symptom, which follows in the course of nerve trunks and ramifies in their terminal branches.

There are many varieties of Neuralgia, and they may be divided into two main groups. (*a*) Superficial; (*b*) Visceral. To take the first group—the superficial—it may be sub-divided into—(*a*) Trifacial (of which I will deal shortly); (*b*) Cervico Occipital; (*c*) Cervico Brachial; (*d*) Intercostal; (*e*) Obturator; (*f*) Crural; (*g*) Lumbo Abdominal; (*h*) Femoro Popliteal or Sciatica. The Cervico Occipital and Cervico Brachial varieties are of interest to us, as they are sometimes the seats of Neuralgia due to certain morbid conditions of the teeth. In the Cervico Occipital Neuralgia the nerves affected are the posterior branches of the first four pairs of spinal nerves, and of these the nerve most affected is the great Occipital, the internal branch of the posterior division of the second cervical nerve, which supplies the integument of the back of the scalp and as far forward as the vertex. In cervico brachial Neuralgia the nerves affected are the posterior branches of the four lower cervical nerves and the brachial plexus, causing pain in the shoulder, neck and arm, following down in the course of one or more nerve trunks.

The chief visceral varieties are—(*a*) Cardiac; (*b*) Uterine and Ovarian; (*c*) Gastric; (*d*) Neuralgia of kidneys, Urethra and rectum. As to the symptoms, at first there is generally numbness and cutaneous anaesthesia, followed by intermittent pain, which

increases in severity and is of a darting, boring, gnawing character, increasing in frequency as the attack increases in length. This is then followed by complete loss of the pain, but generally to be followed sooner or later by another attack. When the pain is most severe it may radiate to other nerves with which it is connected and so increase the area of suffering. Very frequently in bad cases certain definite and exceedingly painful points may be found, and these always correspond with the points of emergence of a nerve from a bony groove, or of a nerve branch becoming subcutaneous, or of a nerve passing through some muscular aponeurosis. Vaso-motor disturbances are frequent; such as pallor or intense redness. In cases where a nerve supplying a gland is affected, increased secretion follows. Loss of sensation in the skin over parts affected often follows, though at first it is sensitive to touch.

Neuralgia may be diagnosed by its typical sharp, shooting, boring pain of an intermittent character, which follows in the course of a nerve trunk, with certain particularly painful spots. In making a diagnosis it may be confounded with other diseases, the chief of which are—(a) Locomotor Ataxy; (b) Rheumatism; (c) Myalgia. In Locomotor Ataxy the pain is of a lightning-like rapidity, somewhat resembling Neuralgia, but they are not localised and are often accompanied by diplopia, and also absence of patellar reflex. In Rheumatism the pain is diffused and influenced by movement, and in acute cases is accompanied by a high temperature, and more especially pain in the larger joints. In Myalgia the pain does not occur in paroxysms, but is dependent on movement.

The second kind, which is certainly of a less intense and severe character, is exceedingly common and occurs in people of all ages, and most frequently is due to some diseased condition of the teeth. The pain is of a darting, shooting nature, passing along in the course of the branches of the fifth nerve, and is frequently accompanied with a dull gnawing sensation, and comes on in paroxysms. It is greatly aggravated by exhaustion, want of food, anaemia, and overwork or anxiety. Patients frequently obtain temporary relief by taking a dose of quinine. The most general cause of this class of Neuralgia is chronic inflammation of the tooth pulp, but various other causes may give rise to

it. The more common are—(1) Difficulty in eruption of wisdom teeth; (2) Exostosis; (3) Presence of secondary dentine; (4) Alveolar periostitis; (5) Overcrowding of teeth; (6) Decomposition of a dead pulp in a confined space. In dealing with cases of this kind it is frequently far from easy to arrive at a correct diagnosis, and it must not be inferred that Neuralgia caused, for instance, by some affection of a tooth in the lower jaw, should of necessity follow in the course of the inferior maxillary division, as it is by no means always the case. Indeed, the globe of the eye, the supra orbital nerve and the temple, and especially a spot near the vertex, are frequently the seats of Neuralgia due to affections of the teeth.

A very interesting case is recorded of a patient who for some years was subject to violent headaches confined to a small area a little to the left of the vertex, recurring three or four times a week. The spot became hot and relief was afforded by pressure with the hand. A left upper canine tooth was suspected and was extracted, with most satisfactory results, no recurrence of the attacks following. Other cases were also recorded, as the case in "Tomes' Dental Surgery," of a patient complaining of pain in a perfectly sound upper second molar. The real tooth causing the trouble being the corresponding tooth in the lower jaw, which was extracted under gas, and the patient could not be persuaded that it was the lower tooth and not the upper one that had been extracted till he felt the space caused by its extraction in the lower jaw.

It must not be inferred that all cases of this kind of Neuralgia are due to the teeth, for they may have their origin from various other causes, and may be cases rather for treatment by a physician than by the dental surgeon, in which case it is advisable to refer them to their doctor; and also I think it would be advisable for all medical men who have patients suffering from any Neuralgia of the fifth nerve to refer them to a dental surgeon, to have a thorough and close examination of their teeth, to see if there should be any likely cause for the Neuralgia.

In the treatment of Neuralgia one of the most important points is to pay particular attention to the general condition of the patient, *i. e.*, whether the patient is suffering from malnutrition, anaemia, or loss of tone, when the diet should be nutritious and easy of assimilation. In such cases codliver oil and tonics

are especially indicated. In examining cases due to anæmia, it is well to observe the bloodless condition of the gums and inner surface of the lower eyelid, since anæmia may be the cause, in spite of a fair amount of color in the face. Also, in all cases of Neuralgia the patient should, as far as possible, be kept free from worry, noise, or dazzling light, especially in the trigeminal variety. The hygienic surroundings of the patient should be looked after, and the patient must not be allowed to remain in close, stuffy rooms, but have as much fresh air as possible, while avoiding draughts. A considerable amount of relief may be obtained by the use of small blisters applied close to the principal focus of pain. In very bad cases of long duration, a portion of the nerve may be excised, or, what is frequently very satisfactory in result, the nerve may be stretched. In cases where all attempts have failed, removal of the patient to a warm, dry climate is frequently successful. Special drugs are recommended in special cases of Neuralgia, the most useful of which are quinine and iodide of potassium. In cases of Neuralgia resulting from rheumatism, salicylate of sodium, in 10 to 20-gr. doses twice or three times daily, may be of some good, but it is of no use in chronic cases or gout. Failing this, one or two grs. of potassium iodide, with about 10 to 15 grs. of sodium carbonate may be useful. In cases due to malaria, which is a very common cause of Neuralgia, quinine, in 10 to 15-gr. doses, twice or three times daily, some time before a paroxysm, is very useful, it also is in cases of a gouty nature, when about 1 gr. of the acetic extract of colchicum may be given as well. Quinine is very useful, especially in cases of Neuralgia of the first division of the fifth cranial nerve.

Having briefly attempted to give a general description of Neuralgia, I will now try to describe briefly Neuralgia of the fifth cranial nerve, or Trigeminal Neuralgia, also commonly known as Tic-Doloreux. Of all the nerves of the body, this is the one most commonly the seat of Neuralgia; and when one sees, as we do in a hospital like ours, the large number, I may say without exaggeration, the hundreds of cases which every week come under our care for treatment, where the terminal branches of this nerve, in communication with the teeth, are subject to such constant irritation and cause such intense suffering; and when we think of the large area of this nerve's distribution, and its numerous com-

munications with other cranial nerves, there is no wonder that it should be affected more frequently than other nerves. This, the largest cranial nerve, has various functions. Arising by two roots, of which the anterior is the smaller and motor root, and the posterior the larger and sensory—thus closely resembling a spinal nerve—it is at once a motor nerve, a nerve of common sensation, and one of special sense—being a motor nerve to the masticatory muscles, and of special sense of taste by the lingual branch, and is the great nerve of sensation to the face and head.

Its communication by the nasal branch of the ophthalmic division through the lenticular ganglion with the third nerve accounts for disordered movements of the eyeball. With the facial nerve it communicates in several ways. Through Meckel's ganglion it communicates by the vidian nerve with the geniculate ganglion of the facial, also by the otic ganglion of the inferior maxillary nerve through the small petrosal nerve. Its communications with the sympathetic system of nerves are also numerous, through the gasserion ganglion, the otic, lenticular, and Meckel's ganglion. It also communicates through the otic ganglion with the glasso pharyngeal nerve. Hence, with so vast a communication, Neuralgia of the fifth cranial nerve may easily be set up by irritation of almost any nerve of the head. Beside its great area of distribution, when affected with Neuralgia there are a great number of special areas of tenderness and pain, corresponding chiefly with points where the nerve pierces bone or facia, or becomes subcutaneous. Thus, in the ophthalmic division tender points exist where—(a) the supra orbital nerve emerges from the foramen on the supra orbital arch; (b) where the nasal branch becomes cutaneous above the ala of the nose. In the superior maxillary division, at the—(a) infra orbital foramen, and (b) over the malar eminence. In the infra maxillary division the—(a) mental foramen and (b) parietal eminence.

I think Neuralgia of the fifth nerve may be divided into two classes—(1.) that known as epileptiform Neuralgia, the most severe form of neuralgia; (II.) that of a lesser form, due in the greater number of cases to the diseased condition of the teeth. Taking the first form, its most characteristic feature is the absolute suddenness with which a paroxysm comes on, and the fearful and intense and almost unbearable pain, and also the equal suddenness

of its departure. A patient may be sitting down quietly, when he is suddenly attacked, the pain being so intense that he may get up and rush about the room in absolute despair. It may attack one or all of the three branches. Frequently the muscles of the face are thrown into violent spasms, and also flushing of the face and lacrymation may occur. The paroxysms may last about twenty to thirty seconds, and may occur as often as every few hours, or even less, or may be absent for a few months, only to return as severe as ever. Patients who are victims to it acquire a worn, haggard and aged expression. This class of cases occurs almost invariably in people past middle life, very rarely before the age of forty years, and chiefly in people over sixty. Patients frequently come of a family which is tainted with insanity. This kind of Neuralgia never seems to be of reflex origin, nor due to peripheral irritation of any branch of the fifth or other nerves.

British Journal of Dental Science for December, 1895.

"ORAL SURGERY," by Edmund W. Roughton, B. S., M. D. (Lond.), F. R. C. S. (Eng.) *Tumours of the Gum.* The term "epulis" is used in different ways by different authors. By some it is used to signify a growth situated upon the gum, no matter of what nature; by others it is limited to one variety of growth, viz., a fibrous tumour; others again define an epulis to be a sarcomatous tumour originating from the bone or periosteum. It is therefore advisable either to discard the term entirely, or else to use it only in its topographical sense, prefixing an adjective such as fibrous, sarcomatous, etc., to indicate the nature of the tumour. The following tumours are met with on the gum:—

Fibrous Tumour. A fibrous epulis may grow from the periosteum of the surface of the alveolus or from the periodontal membrane. It is composed of fibrous tissue and is covered by normal gingival mucous membrane. It is usually a small tumour, not much larger than a pea, but may, if allowed to grow unchecked, attain much larger dimensions, so as even to protrude from the mouth. It may be sessile or pedunculated. When growing from the surface of the alveolus it does not displace the teeth, but when growing from the alveolo-dental periosteum, the neighbouring teeth are frequently separated. Fibrous epulis often occurs in connection with carious teeth, or with the stumps

of teeth, and seems to be the result of irritation, but one often sees cases in which the teeth are perfectly normal. The most common situation of this form of growth is between the upper cuspid and lateral incisor. It is said to occur more frequently in women than in men. It grows very slowly; a tumour the size of a pea may have been noticed for a year or more. It does not recur after complete removal. It is painless unless it is large enough to come in contact with the opposing teeth, in which case it is apt to become ulcerated and give rise to a good deal of pain.

Fibro Sarcoma. Many examples of the common form of epulis contain spindle-shaped and round cells, as well as fully formed fibrous tissue. They resemble the fibrous epulides in their situation and general characters, but differ from them in their microscopic structure and in the facts that they are somewhat softer, grow rather more quickly, and have more tendency to recur after removal. They often contain spicules of bone.

Myeloid Sarcoma. A myeloid epulis consists of a stroma of fibrous or fibro-cellular tissues, imbedded in which are a number of multinucleated giant cells. They are identical in structure with the myeloid sarcomata which grow from the interior of the ends of long bones. Although they project upon the gum, they grow from the bony alveolus and not from its periosteal covering like the fibrous and fibro-sarcomatous epulides. They are much rarer than the ordinary epulis and are more vascular and therefore softer; they are of a dark maroon tint, and are often mottled with purplish spots; they occur in young subjects and grow rather quickly, and show a decided tendency to recur unless they are very freely removed.

Vascular Tumours. This name is given to a variety of epulis which is composed of fibrous tissue containing a large number of dilated, thin-walled blood vessels, mostly venous in nature. These tumours are most often met with in the incisor region, and may grow from the gum, from the periodontal membrane, or from the alveolus itself. In some cases they appear to be in connection with decayed teeth, whilst in others they have no connection at all with the teeth. They usually begin as a small bright red spot which grows slowly, forming either a sessile tumour which passes between the teeth, or a little pedunculated growth which hangs from the gum; they are very soft and compressible of a bright

red or dark purplish color according to the nature of their vessels, very prone to bleed when damaged by a tooth brush or hard piece of food, more especially when the surface is ulcerated, and occasionally they pulsate synchronously with the action of the heart. They are innocent tumours and do not recur after removal.

Papilloma. Papillomata of the gum are rare. It is not customary to apply the term epulis to this variety of tumour. They consist of an overgrowth of the papillæ of the gum and resemble papillomata of other parts of the body in their microscopic structure, being composed almost entirely of epithelial cells supported by a fine fibrous substructure. They may grow from any part of the mucous membrane covering the jaws. They are usually pedunculated; their surface may be more or less smooth, or may resemble a small piece of cauliflower, or may be surmounted by long shreddy processes like enormous filiform papillæ. They are innocent tumours, but occasionally in old people they may become epitheliomatous, especially when exposed to continual irritation.

Epithelioma. Epithelioma of the gum occurs as an ulcer more often than as a definite tumour, it is therefore undesirable to include it under the "epulides." In structure the growth resembles squamous epitheliomata of other parts. The onset of the disease is very insidious and apt to escape recognition; it begins as a small ragged ulcer usually close by a diseased tooth which has been a long-continued source of irritation to the gum. After removal of the offending tooth the ulcer does not heal as it would were it of a simple nature, but tends to increase both towards the cheek and towards the tongue. Induration of the base of the ulcer soon occurs, but owing to the natural hardness of the gum it cannot be appreciated until the ulceration has extended to the soft tissues of the cheek or tongue. As the ulcer increases in size its edges become ragged and everted and its surface foul and sloughy. Before long the lymphatic glands at the angle of the jaw become enlarged, hard and fixed. The breath is foetid, mastication very painful, and there is profuse salivation; ultimately cachexia supervenes and the patient dies from exhaustion.

Diagnosis and Treatment of Tumours of the Gum. It will not suffice to make a diagnosis of "epulis"; that there is a tumour on the gum will be at once evident on inspection. The important point to decide is the nature of the tumour, as upon this decision

the prognosis and treatment must depend. It is not always easy to distinguish between a purely fibrous epulis and one in which there is an admixture of sarcomatous elements until a section of the tumour has been made and examined under the microscope. One must be guided by the rate of growth and the consistency of the tumour; the longer it has been growing and the harder it is to the touch, the more likely is it to be purely fibrous, and, conversely, the more rapid its growth and the softer its consistency, the more likely is it to prove sarcomatous.

A simple fibrous epulis should be cut away with the smallest amount of damage to the surrounding parts. It will usually suffice to remove it with a knife or a small gouge. The adjacent teeth, unless obviously decayed and in close connection with the growth, should not be interfered with; it often happens that a permanent cure can be affected without the sacrifice of a tooth. If from the rapidity of growth and soft consistency of the tumour it is suspected to contain sarcomatous elements, or if recurrence has taken place after previous removal, then more radical means must be adopted. Not only must the whole tumour be removed, but a thin layer of bone must also be taken away from the site from which the tumour springs. If the growth originates from or involves the alveolo-dental membrane the tooth must be extracted, and the alveolus cleared out with a gouge. When the growth is large and sarcomatous in nature it may be necessary to remove the whole thickness of the alveolus; this may be accomplished by making a vertical saw cut on each side of the growth and detaching the piece of bone carrying the growth by means of cross-cutting bone forceps. In those rare cases in which the size of the tumour necessitates an external incision, it should be made in the middle line of the lip, the resulting scar being scarcely perceptible. The lower border of the jaw should always be saved if possible so as to preserve the contour of the face.

Vascular tumours of the gum are easily recognized by their colour and by their great tendency to bleed. They may sometimes be cured by repeated applications of powdered tannin, but the most satisfactory treatment is to excise them and to arrest the subsequent haemorrhage by applying the actual cautery.

Papillomata should be excised.

The early diagnosis of epithelioma of the gum is a matter of

great importance, for it is only whilst the disease is still small that there is any hope of effecting a permanent cure. Any chronic ulcer on the gum in a person beyond middle life should be regarded as malignant if it fails to heal after the removal of all sources of irritation, such as rough teeth or badly fitting plates. In doubtful cases the diagnosis may be settled by removing a small piece of the edge of the ulcer and examining it microscopically. The treatment must be effective and must be carried out without delay if the patient's life is to be saved. No time must be wasted in applying caustics, but the growth must be very freely excised, removing at the same time a wide area of healthy tissue. It will always be necessary to remove the whole *thickness* of the jaw, and very often the whole *depth* as well. Before proceeding to operate the surgeon should make up his mind that he has a fair chance of removing the whole disease, as an incomplete operation is worse than useless.

The Buffalo Medical Journal for December, 1895.

"NOTE ON POSTERIOR NASAL TAMON," by J. T. Pitkin, M. D., Buffalo. For the arrest of severe epistaxis by a posterior nasal tampon, on account of its simplicity of performance and absolute results obtainable therefrom, I would solicit the reader's attention to my *modus operandi*. With the patient seated, preferably in a stiff-back chair, insert one end of a small-sized elastic rubber tube, with a strong silk cord passing through its lumen (tube should be from two and a half to three feet long), into the bleeding nostril. When from three to five inches have been thus introduced, instruct the patient to make repeated forced expiratory efforts through the mouth, *i. e.*, cough, while the operator continues the slow introduction of more tubing *via nares*. In a few moments the distal end of the tube, with its contained cord, will be extruded from the buccal cavity. Should vomiting intervene, although otherwise by no means desirable, it would nevertheless accomplish the same desideratum. Now, if a medicated cotton tampon is securely fastened to the mouth end of the cord, and gentle traction made upon its nasal extremity, the tampon will be drawn to the position desired in the posterior nares. The rubber tube can then be slipped off of the cord, which, with the plegget of cotton, will be left *in situ*.

The Medical Record for January, 1896.

"SUCCESSFUL TRANSPLANTATION OF TEETH AND CHLOROFORM ANAESTHESIA DURING SLEEP," by E. S. Pettyjohn, M. D., Alma, Mich. My little daughter, aged two years and nine months, fell headlong down the cellar-stairs and struck the two upper middle incisors on the edge of the step, extracting them as completely as if by forceps. The alveolar processes of the right tooth were fractured and the gum lacerated the entire length of the root. After the fright and the crying, which continued a half-hour or more, the child was rocked to sleep in her mother's arms and placed in her buggy. We found the teeth on the cellar-steps, uninjured. They were placed in a normal saline solution of tepid temperature. On the arrival of an assistant with chloroform for anaesthesia, the child was sleeping quietly. Chloroform was administered without the child awakening, and the teeth were placed within their sockets and pressed into position, the edge of each tooth fitting firmly in a groove of one blade of a pair of forceps, the hand of the operator being placed on the back of the head, with the pressure properly directed. The gums about were cleansed antiseptically, and the teeth left in position without further dressing or application. The accident occurred about two o'clock, and when the child awoke from her sleep at half-past five, her teeth were in place. The teeth had been out of the mouth fully one hour. Milk and soft food were administered and the lacerated edges of the gums cleansed after eating. Healing of the gums occurred by first intention.

It is now over four weeks since the teeth were placed, and they are now solid, in good position, and of normal color. The gums are normal in color and consistency, and the appearance of the mouth quite natural. I report this as a successful case of transplantation of teeth that had been out of the mouth over an hour, and as another demonstration of chloroform anaesthesia during natural sleep.

The Dental Cosmos for December, 1895.

"SUSPENSION DENTURE," by C. L. Alexander, D. D. S., Charlotte, N. C. This consists of an interior part made of porcelain facings, and a posterior part made of gold or other suitable

material. When these parts are placed in the mouth and secured together, the denture is retained in position by close adaptation to adjoining teeth, and further supported by metal posts set in the lingual surface of the adjacent teeth.

After preparing the holes for the gold post in the lingual surface of the teeth, the first step to be taken in constructing a suspension denture is the selection and adjustment of a porcelain facing or facings, as the case may require. If only one tooth is to be replaced, we will find it preferable to grind and adjust the facing to the natural teeth in the mouth. By doing this we are assured of a more perfect adaptation. The facing should be broader than the space to be supplied, thus allowing it to slightly overlap the adjoining teeth. The facing is then backed up with gold (28 guage) in the usual way, placed in position in the mouth, and an impression taken from the lingual aspect. Before doing this, however, we should place what we term a guide post in the holes made for the reception of the metal post. The guide post will come out with the impression and aid in the construction of the metal work. Before making the model, consisting of marble-dust and plaster, the gold backing is placed in position on the impression, and a staple of fine binding-wire is introduced through the holes made for the platinum pins. The model secured in this way is provided with gold arms, extending from the backing to the guide post and engaging them, also with a gold band encircling the holes through which the wire staple has been introduced. After bending the ends of the wire down upon the band to hold it in position, the little inclosure is filled with the investing material, which prevents the solder from flowing in. By soldering in the usual way the parts are all united, and, when finished up, the piece is adjusted to its place in the mouth, the gold posts having already been secured in the holes made for their reception. A little cement mixed quite thin should always be smeared within the holes and upon the screws before inserting them. When the facing has been placed in position, the pins are bent down within the little chamber to secure the denture to its place. The piece is finished by filling the chamber with some suitable material. I prefer to fill over the pin with cement, then finish up with amalgam, made as dry as possible.

The advantage of this method is the ease with which the den-

ture can be repaired in case of an accident. I have adopted this method for securing all anterior facings, both in crown and bridge work, for a number of years, and cannot emphasize too strongly the value of this point.

"**FRACTURE OF THE INFERIOR MAXILLA, WITH TREATMENT,**" by W. W. Coon, D. D. S., Alfred, N. Y.; read before the Eighth District Dental Society, at Buffalo, Sept. 30, 1895. A very recent case of fracture of the body of the inferior maxilla which presented itself to me I treated in the simplest manner I could conceive, and in looking up the literature of this matter was so thoroughly surprised that I found nothing which approaches the method used for simplicity, that I venture to describe it to you. Three propositions amply justify my attempt to renew your interest in the matter and elicit a little discussion: First. Of all the bones of the body it is the most exposed to injury. Second. When fractured it is the most difficult to retain in correct position. Third. Most cases are subjected to unnecessary pain and inconvenience in treating by the use of interdental splints. I say most cases, because the method of which I am about to speak can be used only when a tooth or teeth are contained in each of the fragments or portions of jaw fractured, and this condition is most commonly presented.

The procedure consists of fitting a metal band accurately to one or more teeth contained in the distal fragment, and soldering to its buccal side a stiff metal bar that shall, when the fracture is reduced, pass in apposition with the buccal side of a loosely-fitting band or bands surrounding a tooth or teeth contained in the other fragment or fragments. Then with the bands on the teeth (uncemented as yet) mark with an excavator point a line on each band the bar passes,—a horizontal mark on a line with the bar and a perpendicular mark on both band and bar,—to indicate where they shall be soldered; then remove and solder, all of which a dentist will accomplish with little or no trouble. Competent assistance may be necessary in maintaining an accurate adjustment of the fragments while the bands and bar are being marked. This done, and the marked places soldered, what remains to perfect the "band-and-bar splint" is to crimp in the ends of the loosely-fitting bands, so as to firmly retain the cement used in its

final adjustment, and placing it on the teeth again (the fractured fragments in right apposition), to determine the accuracy of your soldering. If any deviation has been made, it can be easily corrected, either in the bar or bands, as only the band to which the bar was first soldered is an accurately fitting one, and the appliance is ready for cementing in place. The bands are made loose enough to allow of considerable crimping in at the bottom, *and to allow the appliance to be adjusted on the teeth before the fragments are in perfect apposition*, as it is difficult to maintain such apposition with the mouth sufficiently open to allow it to be placed in position; but while it is going on to the teeth with the cement for its final adjustment, the parts are brought into proper relation and rigidly held so for the little time it takes the cement to harden. When this is accomplished, the fragments are held as in a vise. There is not the least mobility possible, and no undue strain is given the teeth, as is the case when they are ligated with wire or other material, or when "Angle's method of fixation" is used. The advantages are many and very apparent to both operator and patient. The ease and quickness of construction are considerations of value to the operator. The absence of interdental splints and bandages, the use of the jaw in easy speech and mastication, and nothing in the mouth to prevent cleanliness, will be appreciated by all who are in the habit of appreciating anything. The case from which the band-and-bar splint that I show you was made severely tested its utility with loose teeth that would not have withstood strain.

The patient, a middle-aged farmer, while backing a very heavy seeder out of a barn, was struck under the jaw by the tongue of the implement with such force as to give him not only a single compound fracture of the right half of the body of the jaw, but to knock out what few upper teeth he had that came into occlusion. The left fragment of the lower jaw contained but one tooth, a second bicuspid, which was quite loose, the fracture being slightly oblique from the space of the first bicuspid toward the symphysis. He was suffering intense pain when brought to my office by the physician to whom he went. The fractured portions fell away from each other, the left portion especially being lower than one would expect it to be. You will correct me by saying that the muscles drew them away from one another, but I say they "fell

away", because they hung perfectly loose, and the muscles you speak of are at rest except when in voluntary action, and such action only obtained when I hurt him severely in moving the fragments. This "band-and-bar splint" was made in a few minutes, gold being used only because I did not have German silver, and when placed in position most of his pain stopped. He was directed to use his jaw as little as possible on account of the extreme looseness of the second bicuspid; and for more temporary comfort, to rest his jaw and not hurt the upper gums; borated cotton was placed over his lower teeth and a four-tailed bandage applied, which, however, was not tight enough to be much support to the jaw, and was dispensed with very soon. I did not see him again until a month had passed, when he came to have the splint removed. It was perfectly solid on the teeth, and the second bicuspid was much firmer than when the splint was applied. He reported having had a very easy time; said the bone had been united solidly for a week past; and as such was the case, the bands were cut off. The result was all it could be, and was attained with very little effort or time spent on my part, and little inconvenience on his. Had there been more teeth in the shorter fragments, or had that tooth been firm in its socket, I think he could have masticated well from the first.

"PORCELAIN INLAY WORK," by W. E. Christensen, D. D. S., of Munich, Germany; read before the Pennsylvania Dental Society, July, 1895. Porcelain inlay work is far from being a new thing, and yet, because of the new process of making it, it can almost be considered a new kind of work. The old, tedious method of grinding a piece of porcelain so as to fit roughly into a cavity in a very conspicuous tooth, is well enough known to most dentists. The work took a great deal of time, and the results were usually far from satisfactory. There are cases, however, where even the best dentists would prefer such an inlay, imperfect as it may be, to the very best gold filling. Such cavities are those on the labial surface of the front teeth; while on the other hand, cavities which are still more conspicuous—as, for instance, large contours in the incisors and cuspids—could not be restored at all with porcelain. The new method consists simply in taking an impression of the cavity with platinum foil pressing the foil into the

cavity with balls of cotton, and burnishing it smoothly over the edges. By this method a matrix is made and at the same time an impression of the cavity is taken, and the inlay can be built and baked in the matrix so as to fit the cavity. In this way we obtain well-fitting inlays, and large sections, contours, and even projecting corners of the incisors can be restored a great deal stronger and a great deal better looking, and the operation can be performed with a great deal less trouble to the patient, than would be possible with gold or any other material.

The chief objection to all kinds of inlay work is the belief that the cement with which it is set will wash out and leave an empty joint. This danger certainly exists, but, though not entirely obviated, it is reduced almost to a minimum by the high degree of fit and contact which can be obtained by fusing or "casting" the inlay for each special cavity. The heaviest foil used is No. 60; skillful operators will soon be able to use much thinner foil, but even with No. 60 the inlay can be made so as to leave no joint at all. This is done simply by beveling slightly the walls of the cavity outward from the margin, so that when the platinum is removed the inlay will fit tightly on the beveled edges of the margin, thus taking up the space occupied by the platinum and making a perfect fit at the margin. To accomplish this the inlay need not rest on the bottom of the cavity, but should only extend sufficiently into the cavity to be retained. When I make inlays in the molars, which I do only for very large cavities,—believing that in this way I obtain the nicest and strongest fillings with the least trouble to the patient,—I use very heavy foil for the matrix, say No. 60, and after removing the foil I set the inlay with cement, cleaning out the joint, however, with a pointed excavator before the cement is quite hard; or I let it get hard and then clean it out with a very fine bur, and fill it up with amalgam, which entirely prevents any washing out of the cement.

The methods of retaining the inlays are several. When only one wall has been destroyed, as in labial cavities, the inlay, of course, cannot be made to extend into an undercut. Undercuts may be made, but only after the impression has been taken, and merely enough to hold the cement. The inlay, however, can be made with a retaining-groove in the inlay itself, by placing a ball of hardened plaster of Paris on the bottom of the matrix before

introducing the body, and scraping the plaster out again after the baking. In this way the cavity holds the cement, and the cement holds the inlay. If the case is that of a corner contour, the inlay can be made to extend into one undercut, which must be made as wide and deep as possible, into the cervical portion of the tooth, provided the tooth is not a dead one, in which case, of course, the inlay can be made to extend into the pulp-chamber. Inlays in the large molar cavities are usually sufficiently retained by merely extending into the cavity. The retaining groove may be made in the inlay itself, or, if the tooth is a dead one, a pin from a porcelain tooth can be baked into the porcelain so as to extend into the pulp-chamber.

The baking of the inlay is a simple process. The porcelain is obtained in the form of a fine powder, like the body for continuous gum work. The treatment of the powder is similar to that used in continuous-gum work; it is mixed with distilled water to a cream-like consistence, and applied with fine camel's hair brushes. For its first introduction into the matrix I use a fine-pointed steel instrument, so as to make sure of getting it into every corner, also because in this way it is easier to reach the bottom of the matrix without touching the edges. At the first and second baking the edge must be left free on account of the contraction of the body, and for this same reason the body in the matrix should have a convex surface, as otherwise it is apt to contract the matrix and change its shape. At the last baking only the body should touch the edges of the matrix. The edges of the matrix serve as a guide for the correct shape of the inlay, and when a large section is to be made the correct size and shape are produced by repeated bakings, and by gradually adding body until the desired contour has been obtained. In making the matrix a piece of foil must be used sufficiently large to be folded into a triangular shape, or better, into the shape of a funnel, which is introduced into the cavity with the point toward the deepest portion. The foil, when pressed against the walls with balls of cotton and a pair of stump-tweezers, will spread to the walls without tearing. The burnishing of the edges should be done by hand-pressure only, using a stone burnisher. A piece of india-rubber finally pressed over the entire edge with a uniform pressure will secure a most exact impression.

The overlapping foil must not be cut away, but is left on during the process of baking. The matrix may be invested in plaster and silex, or plaster and asbestos; if this is done, it will take one to one and a half minutes longer to fuse the porcelain. I usually get the best results by not investing the matrix, but for the student or inexperienced operator it is safer to use the investment.

"THE FIRST PERMANENT MOLARS," by Dr. W. E. Marshall; read before the Union Convention of the Sixth, Seventh and Eighth District Dental Societies of New York State, at Binghamton, Oct. 29, 1895. While we give due consideration to physiology and hygiene, we should not neglect diet and exercise as important factors in the development of the teeth, and worthy, I think, of more attention than they receive from either the profession or the laity. The first molars are developed at a period when the demand for bone-producing elements in the system is greater in proportion to the supply than at any other, and unless those elements are forthcoming in sufficient quantity, the teeth are sure to suffer, since nature supplies first those parts which are of more vital necessity, the bones of the skeleton. We as a people are prone to eliminate from our food-products those parts in which are stored, in greater quantities, the elements fluorin and calcium, so necessary in the formation of good enamel and dentine. Children should be encouraged to eat such food as contains the bone-producing elements in the best proportions and in the best form for ready assimilation, prepared in such a manner as to require thorough mastication.

It is a law of the animal kingdom that an organ unused loses its function and deteriorates or disappears entirely; so if man should cease to use his teeth, he would soon become edentulous. If the deciduous teeth are made to perform a reasonable amount of work, a demand for tooth-tissue is created, the functions which supply it are stimulated, and much good results to the developing first molars and, indeed, to the whole permanent denture, while the more thorough insalivation and the more perfect digestion and assimilation of the food which result benefit the whole system.

A better appreciation of the value of the first molars, and a more thorough understanding of all the circumstances which in-

fluence them in their struggle for existence, would beget in parents a more intelligent interest in their care and greatly facilitate the preservation of them. Children would be taken to the dentist in good time, and his services could be rendered with much more satisfaction, both to himself and to his patients.

A few general rules, together with the operator's enlightened and conscientious judgment, influenced, of course, by the ability and willingness of the parent to pay for the work, must be our guide in deciding when and how we shall endeavor to preserve these important organs. As a rule they should always be retained in position until the eruption of the bicuspids. Then if their structure and their tendency to decay seem to predict their loss within a few years, their removal before the eruption of the second molars is advisable. We so frequently see good results from their extraction before the eruption of the second molars, as compared with the disastrous results of their removal after that period, that we deem it a safe rule, where there is not a probability of preserving them permanently, to extract before the twelfth year, while subsequent to that period every effort should be made to preserve even their roots.

Having decided that the teeth should be preserved, the operator must use his own judgment in the adoption of methods and the selection of materials. Gutta-percha and oxyphosphate seem to give the best results where the tooth-structure is poor or the decay extensive, while in other cases gold and amalgam are preferable. Even when badly decayed, with pulp almost exposed, these teeth may still be preserved by thoroughly sterilizing a portion of the decayed dentine to be left for the protection of the pulp, and filling the cavity with gutta-percha or oxyphosphate, after coating it with an impenetrable varnish, or placing over the nearly exposed portion a wafer of temporary stopping. Sterilization is best accomplished by thoroughly drying the dentine and sealing in the cavity, for several days, a good germicide, such as a paste made of zinc oxid, with creasote and oil of cloves placed in a depressed disk of tin and inverted in the cavity. If successful in saving the pulp, we can fill more substantially later on.

The models presented show plainly the evil results of extraction of the first molars after the eruption of the second. These are the models of the denture of a young lady, three of whose

first molars, perfectly sound, were extracted when she was thirteen years of age. The reason given for their removal was that otherwise there would be no room for the third molars. In this case only one of the spaces has been filled, while the occlusion on the right side has been ruined. The best masticating surface is the lower left, where the first molar was allowed to remain. True, the third molar has not erupted here, but we do not know that it would have, had the first been extracted, and if it had we have little reason to believe there would have been a good occlusion. The crowding of the anterior teeth has not been remedied by the operation. Here we have permanent spaces created, masticating surface sacrificed, occlusion sadly deranged, and no benefit resulting even to the crowded anterior teeth. Had those teeth been decayed, much good would have resulted from the preservation even of the roots of the right lower. The disaster resulting from the loss of a tooth is not merely in proportion to the amount of masticating surface sacrificed, but depends on the derangement caused in the remaining teeth.

Items of Interest for December, 1895.

"To BRIGHTEN UP INSTRUMENTS," by W. J. Miller, Chicago. To brighten and make nearly as nice as new, rubber-dam clamps that have lost the plating and become rusty and discolored, dip them in a bath of sulfuric acid, then remove, and with brush-wheel and pumice make bright. Wash clean and dip in a strong solution of cyanid of potassium, and they are ready for the plating solution. This is made as follows: Put in a six-ounce bottle about ten cents' worth of nitrate of silver and four ounces of soft water. When thoroughly dissolved, add strong solution of common salt till the curdled appearance given by the salt ceases to form. When settled, use the clear portion for a battery. To make a simple and inexpensive battery, put the liquid in a glass tumbler; having two narrow strips of zinc, one to hook on to the edge of the tumbler, the other to hold the clamp or article to be plated in solution. On the upper end or hook of the zinc strip to hook on the side of the tumbler, soft-solder a piece of copper wire long enough to reach across tumbler and half-way down the opposite side; and on the other end of the wire solder a ten-cent piece of silver for an anode. Put sufficient plating solution in

the tumbler to cover the articles to be plated, leaving them in for fifteen or twenty minutes, or till nicely covered. Now remove and with brush-wheel brighten them. Repeat as many times as you wish; each time gives an extra plating. Other uses will be suggested; for nothing is more attractive in a dental office than bright, clean instruments.

The Ohio Dental Journal for December, 1895.

"A SUGGESTION ABOUT COCAIN," by G. E. Hunt, D. D. S., Indianapolis; read before American Dental Ass'n., Aug., 1895. A survey of the situation leads me to think that the per cent. solution is largely responsible for the various ill effects observed. The great majority of dentists, I believe, get their two, three or four per cent. solutions put up by a druggist, so their ideas of how many grains of cocaine are required to make a four per cent. solution are often hazy.

In the majority of cases an eighth or a quarter of a grain will accomplish the desired result, while the maximum dose, one-half grain, would be attended with at least temporary ill effects. I would suggest that the per cent. solution be entirely ignored in using cocaine *per se*, and that the intended dose be dissolved in an indefinite, convenient quantity of water and the entire amount exhibited.

Following this plan of procedure will impress *dosage* on the operator in a manner that no other method can succeed in doing. Another, and a potent argument in favor of this mode, is the fact that every solution used is a fresh one. The rapid deterioration of cocaine solutions renders the degree of effect produced from twenty-four or forty-eight hour solutions extremely problematical. By dissolving the cocaine as it is needed, and only a short time is necessary to accomplish this, the full effects of the drug are assured. In order to use cocaine in this way it becomes necessary to have a pair of balances for the accurate measurement of the drug. These balances will, however, be found useful in various ways and should be part of the equipment of every well-conducted dental office, whether cocaine is used or not.

"A RARE CASE," by H. L. Ambler, M. D., D. D. S., Cleveland; read before American Dental Ass'n., Aug.; 1895. A young man,

aged seventeen years, has both superior lateral incisors missing, and no outward signs of their being imbedded in the jaw. The inferior denture has the proper number of teeth, but both of the central incisors are remarkably small, perhaps one-fourth the size they should be; still they are of good form and structure, firmly fixed in the alveolus, and the gingiva indicates well formed roots, about in proportion to the crowns. The young man's father, mother, and grand-mother, who are very intelligent people, and have a dentist in the family, state that they are positive that the temporary central incisors were shed, and that these two small teeth erupted in their places.

Both superior and inferior temporary dentures were normal. His mother needs a left superior lateral incisor to complete a full denture; the father's is complete. The grand-father and grand-mother, on both the father's and mother's side, had the full number of teeth. The only abnormality we could trace, except the mother's, was that the grand-mother retained the left superior temporary cuspid until she was fifty-three years of age, at which time a permanent cuspid, of fair form and size, erupted and is still in place after a lapse of twenty-three years.

"THE PATHOLOGY OF INFLAMMATION," by G. E. Hunt, D. D. S., Indianapolis, read before Tri-State Meeting, at Detroit, June, 1895. For purposes of description the process of inflammation may be divided into—first, changes in the blood vessels and circulation; second, exudation of fluid and of blood corpuscles from the vessels; third, changes in the inflamed tissues. This division is made merely to facilitate consideration of the subject, and it must not be imagined that these changes occur successively, for such is not the case—they are all taking place at the same time.

We have first dilatation of the vessels in the affected area, with increased rapidity of blood-flow. Irritation of a sensory nerve will produce dilation of the arterioles in the area to which the nerve is distributed, by reflex action. On account of their non-elastic walls the capillaries connecting with these arterioles do not dilate proportionally; consequently, blood-pressure in them is increased and acceleration of blood-flow through them results.

After about an hour of this accelerated blood-flow, that of

retardation of blood-flow occurs, the vessels continuing dilated. Retardation is due to certain changes in the inner or endothelial wall of the smaller veins, which cause it to become sticky. This degenerative change also affects the cement substance binding together the edges of the endothelial cells constituting the vessel wall, deteriorating it and rendering it more penetrable. The increased friction produced by this sticky condition of the vessel wall is soon evidenced by the gradual slowing of the blood current, and the tendency of the leucocytes to adhere as they roll and tumble along the periphery of the lumen. It is probable that this morbid condition embraces also the inner wall of the arterioles, inasmuch as it is histologically identical with the corresponding wall in the veins, but the adhesion of leucocytes is greater in the veins than in the arteries, because the blood is not driven in successive waves in the former and the flow is not so intermittently swift. The valves in the veins also assist in causing arrest of the leucocytes. Other corpuscles adhere to these, and the lumen of the vein is gradually occluded—the blood-current becoming proportionally slower. This process extends back into the capillaries also. As long as there is a channel of sufficient caliber in the veins, the red corpuscles pass on through, but when that is closed to them, or so nearly so that only a few may find a way, the others mass themselves in the capillaries and arterioles, causing these latter vessels to look as though filled with a red injection mass. There are leucocytes mixed in with the red corpuscles, about the usual proportion as found in the normal blood.

Oscillation occurs when the veins have become so nearly occluded that the flow is materially arrested. Then, at each heart impulse, the blood surges into the arterioles and capillaries leading to the affected veins, and not being able to pass through, flows back during diastole. Stasis follows oscillation. In stasis the blood-mass is stationary in the vessels, although it may remain fluid for two or three days. During stasis the capillary wall, being unnourished, gradually perishes—starves to death. When this occurs, thrombosis or coagulation of the blood takes place. This, in brief, constitutes the changes occurring in the blood and circulation.

Coincident with dilatation and increased blood-flow, we find the normal exudation of fluid from the vessels much increased in

quantity and changed in quality—becoming much more albuminous and consequently more coagulable. At first the lymphatics, by extra efforts, are able to remove it, but in a short time it is poured out in such quantities that those vessels are overtaxed and the fluid accumulates in the connective tissue spaces, swelling the part.

Now, if a small vein or capillary is closely observed, leucocytes are seen passing through the vessel wall, at first scatteringly, but eventually in great numbers. They pass out through small openings in the cement substance which joins together the edges of the endothelial plates constituting the vessel wall. During inflammation, while the vessels are distended, this cement substance gives way in the shape of minute holes or stigmata, which gradually become larger and are known as stomata. The leucocytes pass through the stomata mainly by virtue of their amoeboid movements. The cause of this diapedesis of leucocytes may be found primarily in the deteriorated condition of the vessel wall, by which facilities are afforded for its penetration, and in the inherent tendency of the cell to exert its power of amoeboid motion. Contributory conditions exist in the pressure of fluid and other leucocytes from within, and the probable fact that the surface of the endothelial plates are sticky, and the cement substance through which the cells pass is not, so that passage through the stoma is easier than passage along the inner surface of the wall over the sticky endothelial plates.

The red corpuscles, not being endowed with amoeboid motion, are not found in any quantity outside of the vessel, unless death or rupture of the vessel wall occurs; then an immense dispepsia of red corpuscles may occur from the engorged vessels. A few red corpuscles are seen in the earlier stages, but they are those that some unwonted circumstance has thrown in front of a large stoma, and which the blood-current has forced through. The white and red corpuscles thus set free in the tissues are washed along by escaping fluid, and crowded forward by other leucocytes escaping, and finally may wander some distance from the vessel from which they escaped. The leucocytes also move away by their power of amoeboid motion. Thrombosis, when it occurs, puts an end to the escape of fluid and of corpuscles.

The changes occurring in the inflamed tissue may be briefly

described. The tissue is softer than natural, usually watery-looking, blurred, and the cells are indistinguishable. The cells are separated by fluid and obscured by fibrin filaments and leucocytes. Nourishment ceases and coagulation necrosis may occur.

Such, in brief, is the course of all inflammations. If the cause of the irritation be removed, and the general health is fair, an inflammation may be stopped at any stage. If coagulation takes place, an abcess with loss of tissue is bound to result. Rise of temperature, where it does occur, is due simply to more rapid circulation of the arterial blood. Swelling is due to the exudation of fluids and corpuscles into the part; pain, to pressure of such exudate on the terminal nerve-endings, mainly. Impaired function is the result of the general injury to the tissues.

The International Dental Journal for December, 1895.

"A NEW APPARATUS FOR CONTINUING ANÆSTHESIA WHILE OPERATING IN THE MOUTH," by Thomas Fillebrown, M. D., D. M. D., Boston; read before the Academy of Stomatology, Oct. 15, 1895. At the Columbian Dental Congress, in 1893, I exhibited an apparatus for maintaining anæsthesia without a mouth-piece, which I described as consisting of "a bellows, connected by rubber tubing with the long tube of a twelve-ounce wash-bottle, with a stop-cock intervening to regulate the flow of air. From the bottle extends a half-inch rubber tube to the patient. The bottle is filled one-third full of ether. The bellows is inflated and the stop-cock opened, so as to allow the air to bubble up freely through the ether and become saturated with ether vapor. The etherized air is discharged through the second tube, a few inches from the patient's face."

I have since found it unnecessary to pass the air through the anæsthetic, but obtain equally good results by simply passing the air over the ether or chloroform. I have also found that if the administration of the anæsthetic is somewhat prolonged, the evaporation reduces the temperature so low as to prevent saturation of the air; when this obtains, the hand of an assistant or a cloth wet with warm water should be applied to the bottle to raise the temperature to, at least, 60° F. In cases of children I have found no difficulty in, from the first, maintaining a perfect anæsthesia, but my experience with adults proves that they must be

first thoroughly anæsthetized by ordinary methods, as many adult patients require an almost entire exclusion of air for a time to become fully anæsthetized. I encountered two partial failures before I realized the cause. But with these patients this method proved more than sufficient, after the anæsthesia was made complete by the ordinary administration. I have lately added a bent metallic delivery-tube, which enables the assistant to stand behind the patient while administering the anæsthetic, and thus be entirely out of the way of the operator. The mouth-gag I believe to be essential to success, and I never omit its use. Perhaps infants might not need it.

I have thus far been intent on establishing the complete success of the anæsthesia, and have made no effort to economize the ether. As I now use it, four ounces of ether will maintain complete anæsthesia for one hour; further experience may make less sufficient. With this apparatus, simple as it is, complete anæsthesia may be maintained for any length of time, and any operation on the face or within the mouth of the patient be performed, and the operator will not be interfered with any more than during an operation on any other part of the body. An assistant can use the sponge freely and keep the throat clear of blood and mucus, so that very seldom will it be necessary to use any other means to free the mouth of accumulations. The bellows is one of the ordinary dentist's foot-bellows. The bottle, with rubber stopper, is one taken from an oxygen apparatus found at the dental depots. The stop-cock is not absolutely essential, and some glass tubing will answer to pass the air through the wash-bottle. A tin-worker can furnish the delivery-tube at short notice, and rubber tubing is always at hand, so no one need be deprived of the benefits of this method for lack of an apparatus.

Many conceive the idea that it is a spray which is furnished the patient to breathe, but nothing is further from the truth. If a patient inhales from a sponge or towel saturated with ether, he does not breathe ether as such, but ether vapor. It is just the same if air is forced through or over liquid ether. The air simply takes up the ether vapor, and the patients breathe etherized air, the same as is breathed through a sponge or other inhaler.

The essential merit of my invention is that the etherized air is discharged toward the patient from a point far enough from the

face to prevent the apparatus from interfering with the operation going on in the mouth, and in sufficient quantity and with sufficient force to furnish an anæsthetic atmosphere for the patient to breathe without taking in air from outside the current. I will add here that the surplus anæsthetic discharged into the atmosphere will not sensibly affect either the operator or his assistant.

Air containing ether or chloroform vapor has long been used for inducing anæsthesia, but always with an inhaler that covered the face and rendered any operation about the mouth impossible while the anæsthetic was being inhaled. Dr. Snow, in 1849, mixed chloroform vapor with air in the definite proportion of three and one-half per cent., and found it very safe, successful, and economical. Clover, in 1862, used the same mixture as Snow, and devised an apparatus for administering it, the principal feature of which was a large reservoir-bag hung over the operator's shoulder. Snow, about the same time, devised an inhaler lined with lint. The lint was wet with chloroform, and through this the air was drawn by inhalation, which, while passing over the surface of the lint, took up a portion of the vapor.

Dr. Horace Packard, of Boston, a few years since, devised a very convenient and compact apparatus for administering etherized air, which was suggested to him by the Junker system for giving chloroform, and it was the use of this that suggested to me the apparatus which I have described.

The Pacific Stomatological Gazette for December, 1895.

"THE RELATIONS OF MATERIA MEDICA AND THERAPEUTICS TO STOMATOLOGY," by Russell H. Cool, D. D. S., Oakland, Cal., read before the Calif. State Dental Ass'n., July, 1895. The wonderful advancement of mechanical invention in dentistry has been, strange to say, one of the factors in producing a certain narrowness of mind. We are apt to devote our entire activity and effort to an endeavor to become great operators; skilled prosthetic workmen; artists in orthodontia; and we are apt to forget that the teeth are but part of that great, wonderful throbbing engine—that complex system of moral, mental and physical force—which we call man. Let me not be considered as decrying the purely mechanical branches of our profession. By all means let our lives be devoted to necessary efforts to master them; but let us

go farther and higher also. Let us remember that we have nervous conditions to deal with sometimes, as well as the eradication of decalcified tissue; that sometimes there is a sensitive quailing invalid behind the cavity that is being artistically filled. We should have in mind our duty to the patient, and know that often we can relieve him more by systemic treatment than by any local manipulation, however skillful it may be, upon the teeth themselves.

The study of the human face becomes absolutely unavoidable in successful practice. One patient that an injury will produce no visible effect upon will be followed by another that a much slighter operation will produce a serious and enduring impression, and yet both of these patients are apparently in perfect health; still there is an unlikeness in their temperament, which should be our guide in calculating the effect of an operation.

In handling extremely nervous patients, I believe it our duty to use any and all remedies at our disposal in an intelligent manner. Aromatic spirits of ammonia, administered previous to a tedious sitting, will often have a pleasant effect, also anti-kamnia, or combination of anti-kamnia and codein. Phenacetin, or phenacetin and caffeine, acetanilide, anti-pyrin, or in some cases, morphine sulphate, or in conjunction with sulphate atropine, one-fourth grain of the former and one one-hundred and fiftieth grain of the latter can be used advantageously, and a patient that would be a suffering, howling torment to the operator will become as docile and quiet as a lamb. Extreme cases come to us and we should be as equal to an emergency as any surgeon. No surgical operation upon the human body is free from danger.

The first and most important of the consequences of any operation is hemorrhage. Though with every surgical operation there must always be a small amount of blood lost, it is the aim of the operator to lose as little as possible. The more the hemorrhage the slower the repair; and the less of blood is lost the quicker the repair; also, in proportion to the loss of blood, shock takes place.

There is probably no one present who has not had experience with anaesthetics, when you have been compelled to perform a surgical operation within the mouth or upon the associated part. How many of you have found your patient with rapid respiration,

rapid or intermittent pulse, patient filled with fear of the consequence of your efforts to repair some pathological condition. Such patients are most frequently anæsthetized without any preliminary preparation, and are frequently the source of great anxiety to the operator and the consulting physician. I have, myself, taken part in cases where the lips have turned pale, even purple, the finger nails turned black, a cold perspiration sprung out over the entire cutaneous surface, respiration ceased, pulse nil, and patients apparently in a moribund condition, where to the casual observer death must certainly take place; and yet, with the hypodermic use of whiskey, aromatic spirits of ammonia, digitalis, nitro-glycerine and artificial respiration, the circulation and respiration of these patients speedily took place and they returned to life. Of these and kindred agents I wish to speak and occupy a few moments of your valuable time.

Alcohol.—May be injected at a temperature of ninety degrees thirty gtt. to 3*i* without sloughing. A temperature below this or above may produce sloughs. Flood made two hundred injections of whiskey in coffee in four hours with complete success, though at the same time he injected ten to twenty minim doses of tincture of belladonæ, which may have contributed to the result.

Amyl-Nitris.—Sedative and anti-spasmodic; lowers temperature by ozonizing the blood; relaxes arterial system; reduces arterial pressure. Sixteen to eighty minims have been injected in a dog, and ninety minims in a man, but I consider ten minims an unsafe dose hypodermically.

In a formula of ten parts amyl-nitrite, alcohol thirty parts, glycerine sixty parts; total one hundred parts. Eight to fifteen minims should be injected every hour as the condition of the patient should warrant—that is, the absence of color to the face, a small and frequent wiry pulse.

Nitro-Glycerinum.—A powerful poison. One to six gtt. of one per cent. solution produces fullness, quickness of pulse, diminution of arterial pressure, similar in its effect to amyl-nitrite, and can be used in hemorrhage, in stimulating heart action without causing perceptible increase of arterial pressure; hence a remedy of much importance in hemorrhage, because it increases the vital forces without producing arterial fullness, which would result in further hemorrhage and possibly death. Would advise the injec-

tion of one drop of one per cent. solution a few minutes before the injection of cocaine. Would suggest also its use to the extent of one, two or three drops, in all cases of collapse after the administration of an anaesthetic or any surgical operation, but would recommend in addition to this remedy the speedy hypodermic injection of aromatic spirits of ammonia, whiskey and digitalis. The three latter agents may be used hypodermically in from one-half to one drachm doses, and these doses may be repeated every one-half hour if the patient is in extreme collapse; but, if in ordinary cases of hemorrhage, with but slight shock to the patient, fifteen minimis each of these three remedies at a temperature of ninety degrees, with injection of two or three minimis of nitro-glycerine and inhalations of nitrate of amyl, are sufficient to stimulate the vital forces and bring the vital organism back to its normal condition.

The question arises in our minds: what parts of the human anatomy should we avoid in the use of the hypodermic needle, and of what parts we should make use? The places to be avoided in puncturing are veins, inflamed parts and bony prominences; to be more expressive, it would not be wise, if you desired to give any medicated injections, to insert the needle through the skin on the inside of the tibia, on the dorsal surface of the foot, on the back of the hand or fingers, on the scalp, on the forehead, over the olecranon process or posterior to the ear. These parts are principally bony tissues, covered mostly by skin, and almost devoid of lymphatics, the latter being eminently necessary in taking up a medication and carrying it to the central organs to procure the required effect.

Having considered the points on human anatomy to be avoided, I will now speak of those regions which, in my mind, are the most appropriate for the assimilation of agents that we desire to equalize the circulation and to stimulate the nervous system. The external part of the arm, away from the principal blood-vessels; the outer side of the thigh, away from the principal blood-vessels; in the abdomen, where there are practically no blood-vessels, and in the chest tissues, where there is also an absence of important vessels.

Now a word about the syringe, which should be thoroughly sterilized. After drawing the required amount of liquid into the

syringe, shall we immediately insert the needle through the skin and inject the fluid therein? Most certainly not, because in drawing a fluid from a receptacle a certain amount of air must certainly be in the barrel of the syringe, hence it will be necessary to place the syringe in a perpendicular position, the needle uppermost, and the piston must then be pushed forward until all the air is forced from within, and one drop of the fluid appears. I believe that lack of attention to this particular point is the cause of a great deal of sloughing and disagreeable effects, and the injection of a minute portion of air has resulted fatally.

Also one word regarding preliminary treatment of anæsthetic cases, or those particular cases where with the usual observations we frequently find the pulse abnormally rapid, the patient timid, the respirations rapid, and all indications present of a slight shock before any surgical interference. I have concluded that there are medicines in the pharmacopœia that will destroy those depressive conditions and permit us to continue to operate in safety—considering that the heart and kidneys are in a normal condition. I am in the habit of administering one-fourth grain of morphine by the mouth one hour before an operation. Fifteen or twenty grains of bromide of potash have also a happy result in quieting the nervous system, and when administered with brandy we have the cerebral sedative and cardiac stimulant. Chloral, five grains; morphine, one-fourth grain; brandy, one ounce, have, with me, destroyed in the majority of cases the usual nervous symptoms that are unpleasant to me as a precedent to any operation. These same agents may be administered with benefit to our patients when operations are performed without anæsthesia.

The Dental Review for December, 1895.

"TREATMENT AND FILLING OF PUTRESCENT PULP CANALS," by Dr. H. C. West, Chicago; read before the Odontographic Society of Chicago. For convenience of discussion pulpless teeth may be classified as follows: First. Those which are found in dormant condition. Second. Those in which irritation may excite inflammation of the periodental parts. Third. Those in which the periodental membrane is in an inflamed condition. Fourth. Inflammation of the membrane followed by alveolar abscess discharging through fistula.

The first, or dormant class, is one with which we are all more or less familiar, and in which the pulp has died with no immediate pain to patient, nor after disturbance, until disturbed. The cause of death usually being some slight blow or accident which causes the change to take place, or may be caused by regulating irregularities. Amongst other causes of death may be mentioned fillings in too close proximity to pulp, escharotics applied to deep cavities without proper precautions, etc. Neuralgic troubles may often be traced to teeth of this class while the pulp is undergoing the change. This class of teeth may remain in the same dormant condition for years, giving no disturbance to their possessors. Manifestations of a more serious nature, however, are liable to occur at any time through some irritating cause and it is then that we approach the second class.

Gaining access to the first class should be done with the utmost care by application of rubber-dam (particularly upon the anterior teeth), and partially and by slow degrees opening into the chamber by aid of a very sharp drill or bur, which should be held under perfect control, care being taken not to allow the instrument to drop or press with sufficient force into the chamber and thereby force any of the secretions through the apical foramen.

Having gained a partial opening into the chamber, immediate and thorough disinfection should be resorted to by application of H_2O_2 upon a small pellet of cotton by aid of broach, or better still, should fluids be present, a small crystal of permanganate of potash may be used, being carried gently through the opening already gained and allowed to dissolve in the fluids found there, ever remembering in either case the injunction already given to avoid force and thorough disinfection before disturbing pulp-canal.

If the operator be careful enough in this class of work the majority of them may be successfully treated and filled within a few days. After carefully cleansing in the above manner and removing later such of the pulp as shall be left, a dressing of some good antiseptic should be carefully introduced and the tooth properly sealed. In the course of two or three days the treatment should be removed carefully, dry the cavity with hot air and apply second treatment, filling a week or ten days later. Should peridental trouble arise during this course of treatment we then

have the second class to contend with, and the one in which the most care and delicate manipulation on the part of the operator must be manifested.

The second class, or that in which slight irritation to the peridental membrane takes place, may follow rapidly upon the first of its own accord or may be caused by carelessness upon part of operator in treating the first class as already stated. This second class of cases may occur from various causes, such as teeth in which the pulp chamber has been opened to the secretions of the mouth indefinitely, or from causes of violence similar to the first class of cases.

This secondary inflammation of the peridental membrane demonstrates itself by gases given off from such teeth as may be closed, or by the putrid matter having been forced, either by the act of mastication or otherwise, through foramen. Treatment in this case should be the free opening of the canal and the removal of pulp, followed by a mild antiseptic dressing. Counter irritants should be applied freely to the gums, among which may be mentioned capsicum plasters; equal parts tinct. aconite, iodine and chloroform; figs; raisins, etc. This will tend to act with favor upon the inflamed condition of the peridental membrane, and will restore to a more normal condition the congested circulation and high state of nervous irritability.

It is also a noticeable fact in this class that an effusion of secretions, due to the inflamed state of the blood vessels, is forced through the foramen, and the same care is necessary in applying the dressing that would be necessary in case of generating gas. Even in the later stage of treatment, after fear of generating gas has passed and the operator feels that he is safe in placing a compact sealed dressing in the canals, he is somewhat astounded to find that packing of the dressing too closely, and not allowing for these effusions, has given rise to more trouble, and doubtless all members have noted cases where, upon removal of the dressing, these effusions would well up, possibly sufficient to partially, if not fully, fill the pulp chamber, and by close observation the heart's pulsation might be plainly noted. A treatment of some mild astringent, such as tannic acid and glycerine, usually does away with this difficulty, the tannic acid acting as the astringent, while the glycerine may act as a soothing rather than an irri-

tating accompaniment. Obstinate cases of this nature will occasionally present themselves. I have in mind one case in which I devoted myself to the patient treatment of the tooth for something over three months, using everything to arrest this engorgement. I finally consulted one of our venerable fathers in the profession, and his advice was to secure temporary dryness and fill the root, which I did, at the same time applying a strong counter-irritant to the gum. The result was perfect, and since that time I have similarly treated others. This method of root filling should not be resorted to, however, until sufficient time has been given to secure proper condition, and I question whether trouble in some cases might not arise otherwise.

The third stage, or that in which the membranes are in a state of inflammation, is marked by various symptoms, among which may be mentioned redness and swelling of the gums, soreness and elongation of the tooth, accompanied usually by a dull pain, which becomes more intensified as the case progresses, until the last stage when fistula forms, or other relief be given. The same treatment as that given in the second stage should be resorted to here, together with a few other suggestions. Gaining free access to the pulp canals should be the first move, and this is not so easy at some times as we might desire. Teeth of this nature, or rather the surrounding parts, it is needless to say, are usually in a very sore condition, and every precaution should be taken to save the patient as much pain as possible. Various means may be resorted to to accomplish this. As the primary seat of inflammation may be found at the apical foramen, our main efforts would of necessity be directed toward relieving all, or as much pressure upon these parts, caused by the use of drills or burs, as possible. This may be done by placing a silk ligature around the crown of the tooth, drawing taut, and allowing the assistant to exert sufficient force in the opposite direction from angle of bur, to counteract upon the pressure of same. In cases of roots or teeth where ligature cannot be used, a wedge pressed gently but firmly between it and the adjoining tooth, or firm pressure with the thumb or finger upon the side of the tooth, will partially accomplish the same purpose.

Having gained access to the pulp chamber and removed what debris may be present, a free opening should immediately be

found through the foramen by aid of a piano wire broach, to give the putrid matter, if present in sufficient quantity, a means of escape. In constricted canals this is sometimes quite difficult of accomplishment. Should mechanical force be necessary, a Gates Glidden drill, very small, used as a hand instrument, should be used to accomplish the purpose, care being taken not to make the opening of foramen too large, thereby lessening the chances of the healing upon insertion of root filling. Another method resorted to in some cases, or more particularly in the case of chronic abscess with fistula, is amputation of root. This should be done only after careful consideration as to the health of patient. Cases where this operation may give the happiest results are those in which the roots have already been filled, having passed the proper antiseptic tests, and then from some unknown cause a sudden inflammation appears, which will not yield to local treatment. Where this is necessary, my method has been as follows: To first, by aid of the lancet, make an X-shaped incision upon the gum, carefully locating the point at which the amputation is to be made. This I follow by the use of a small drill at right angles with the root, carrying through process and root. I next take a fissure bur of same size and follow the course of the drill, cutting laterally upon the root and removing it in this manner. The operation is concluded by the use of a round bur sufficiently large to properly round off the point of root. In all cases the root should be filled previous to operation. Not long since I performed this operation upon a superior central incisor for chronic alveolar abscess of some three or four years' standing (the root of tooth having been filled). The case had refused to yield to local treatment of all kinds; the canal I found constricted near foramen, and as a last resort I decided upon amputation. The result was perfect.

As to the method of applying dressings to pulpless teeth in an inflamed state, I must say that I differ somewhat from some of our older and more learned members of the profession. The use of certain essential oils, especially in the anterior teeth, I seriously object to, more especially to the use of oil of cassia or cinnamon. Being very penetrating in its action, it will thereby infiltrate throughout the canaliculi of the tooth and remnants of putrid matter, causing the discoloration of the tooth which we are so desirous of preserving. I have noted this to my sorrow in

several cases, and my treatment of this class of teeth at present is to use some antiseptic which is partially (but not wholly) self-limiting in its action. I find nothing for this purpose gives better results than campho-phenique. I wish to state, however, that after a dressing of campho-phenique has been applied that this may be followed by the essential oil with good result. I am quite desirous of having this point on the use of oils brought out in the discussion. Another point in which I wish to differ from a great many practitioners, is the practice of taking this inflamed class of the teeth "in out of the wet." The theory that "oil and water will not mix," I am willing to concede, but I do wish to say that with the molar teeth, where we find the canals so tortuous and restricted, that in the majority of cases, instead of applying the rubber dam to the inflamed and sore member, I endeavor to dry the cavity with bibulous paper, after the proper excavating or drilling has been accomplished, and this part I make as limited as the case will permit. I then gently place therein a palatable essential oil, followed by a small pellet of cotton saturated in albolene, a mineral oil which is practically tasteless, but which will retard the interference of the fluids and at the same time allow the gases to escape. Dismissing the patient with this treatment, I usually find that at the next sitting the tooth will more easily receive the application of the rubber dam and work can from this time be carried on from under cover. I do think that the essential oils will overcome what moisture there may be in the tooth after first sitting, to accomplish the good expected of it. This does not apply to the anterior teeth, where the canals are more easy of access and the point of infection easily reached. The danger of discoloration from moisture would also discourage its practice in these cases.

As to the fourth and last stage, or inflamed membrane accompanied by abscess and fistulæ, two things are necessary to accomplish the best results. 1. The removal of the cause by perfectly cleansing the pulp chamber throughout its entire extent. 2. To obtain as perfect drainage as possible.

Having obtained these requisites, the health of the patient should receive proper attention. Should he be enjoying a fair degree of health, abscesses arising from putrescent pulps will

usually yield more readily to mild treatment than to the more powerful drugs. Gravitation of the superior teeth tend to favor drainage in a more marked degree than is the case with the inferior. A simple syringing of the tract with H_2O_2 by the aid of a syringe in many cases accomplishes the purpose. Should this fail I follow the treatment by gently carrying through the tract a mixture of carbolic acid, parts 5, cassia, parts 3, alcohol, parts 2 (Dr. Harlan's remedy), taking care that none shall come in contact with the outside membrane. I do not, after using a remedy of an escharotic nature, immediately fill the roots, as do many operators, but await developments, as I consider it will, in most cases, as readily heal with a sealed dressing in the canal as it would were the root filled.

"PROSTHETIC DENTISTRY," by T. E. Powell, D. D. S. Chicago; read before the Hayden Dental Society. I will describe a method of swedging aluminum plates which has been very successful in my practice. If the patient comes to me with the mouth ready for a permanent plate, in every case where he cannot afford gold I advise aluminum, and find in many cases he will accept my advice when the advantages of aluminum over rubber are shown.

The kind of plate to be made having been decided upon, I choose an impression cup which will very nearly fit the mouth. If there is an extremely high arch I build up the center of the cup with wax until, when I place it in the mouth, the upper surface of the cup will come in contact with the mouth at every point. After having adjusted the cup to the mouth, the next step is to mix the plaster, which should be of the consistency of batter, salt being used to make it set quickly. If the mouth be hard I do not take the impression until I can turn the cup upside down without dislodging the plaster. If the mouth be soft the impression should be taken when the plaster is much thinner. In either case it should be done quickly. In order to have full view of the mouth I have the chair adjusted so the patient will be reclining at an angle of 45° . The plaster being ready, I press the heel of the cup firmly to the roof of the mouth with my third finger under the arch, and then force the cup up in front, taking care to have the handle pointing directly outward from the nose, so that the upper rim of the cup will pass free of the alveolar ridge and take a good im-

pression of the depressions above the ridge. In taking the impression as above described, I use only a minimum amount of plaster, and thus avoid the disagreeable experience of having the patient's last meal deposited on my carpet, and I also gain the patient's everlasting gratitude. I leave the impression in the mouth until the plaster left in the bowl will break with a clean fissure when taken in the fingers. Then I take hold of the lip and pull up the buccinator muscles so as to let moisture and air in above the impression, when it will come down without any difficulty. If this should be a flat mouth instead of one having a high arch, I would make a clearly defined depression over the hard palate, and would scrape the places in the impression that would correspond to the hard places in the mouth so as to relieve pressure on these parts when the plate is being worn. After having trimmed the impression to suit the case, I give it a coat of shellac varnish and then a coat of collodion or thin sandarach varnish, dip it in water and then pour my model. I make the model high and smooth the sides while the plaster is soft, making the base a little larger than at the ridge. After the plaster has hardened, the shellac varnish gives me the line between the model and impression, so that I can cut away the impression with impunity. If there is too much undercut above the ridge I treat with sandarach or collodion and make cones of plaster and pumice.

Then I varnish the model with thin sandarach and allow it to become thoroughly dry before using. When dry I set the model on the bench and on the inside of the ring and pack the sand around the model. The sand should be smoothed off even with top of ring. I then turn the ring upside down, tap on the model until it is somewhat loosened from the sand, then reverse the ring, holding my hand under the model so that the heel will drop first, and nine times out of ten the impression is all right. Next I remove the cones from the model and place them in position in the impression in sand.

The die is made of zinc which has been slowly heating and which will now quickly fuse when the blowpipe is turned on. As soon as it is fused I pour the metal, and then place a small ring over the metal already poured, and pour again in order to have an additional thickness of metal for swedging. When I have the die removed from the sand and cooled, I paint it with a thin solution

of whiting, or else cover with a coating of soot by holding flame of blowpipe underneath without its being supplied with oxygen. I then bury the die in sand, leaving that portion of which I wish to make a counterdie exposed. I place a ring around the exposed portion and pour the counterdie, which is three parts lead and one of tin; I am now ready to shape plate to die. I have already on hand my aluminum, which should be from 22 to 28 gauge, preferably about 24.

To get dimension of die, I make a pattern of tin foil and cut out my plate according to this measurement. The aluminum should be thoroughly annealed, and conformed to the die as accurately as possible with the aid of a piece of pine wood rounded on the end and the mallet. When I have the metal fairly shaped to the die I anneal again and place metal between the die and counterdie and swedge with a heavy hammer, but only until the plate fits the die accurately, as too much swedging will cause it to rock. I now trim the model slightly in the fossæ above the ridge and also slightly on the heel, so that when the plate is placed in the mouth it will hug up close to the tissue.

After having the model trimmed to suit, I place the base plate on it, and if it does not fit perfectly everywhere I burnish the plate until it does fit. The next step is a very important one, namely, trying the base plate in the mouth. It must conform perfectly to the mouth, touching all points at the same time and not rocking when pressure is applied on either side. If it fits closely I place my finger under the arch of the plate and pump up and down. If imperfect at any point the saliva will be forced out with a squirting noise, and by watching closely the place where the saliva is ejected its location can be readily detected. To remedy this defect the base must be again placed on the model, and burnished until repeated trials with the pumping process will prove that the bite is absolutely perfect. If the metal base is always fitted in this manner I will guarantee that the plate will adhere to the surface, no matter how flat the mouth may be.

After having assured myself that everything is all right up to this point, I take my aluminum punch and roughen the base for rubber attachment. I roughen the rim of the plate with a small chisel and also outline in the same manner where I want the rubber to extend in the arch. The wax for the bite is now placed on

the base, having used my judgment as to the length of the bite. I place base with wax adjusted in the mouth and instruct the patient to close the lips as when in repose. Then I cut away the wax or put more on, as the necessity of the case requires, until I have restored the natural contour of the face. Then I have patient bite sufficiently hard to leave a slight impression of the lower teeth in the wax. Then I remove from the mouth, take impression of lower teeth, make plaster model of lower teeth and place it in position on the wax bite, and fasten the whole thing on an articulator. The next step is to set up the teeth in wax on base plate in proper occlusion with the lower model and try in the mouth to prove correctness. Any changes to be made to give a more natural appearance can be made now, after which the plate is ready to invest and vulcanize.

TRANSMISSION OF CHOLERA BY THE HOUSE FLY.—Craig (*Medical Record*) has made some careful experiments by feeding common house flies with a fresh bouillon culture of the cholera spirillum. At the end of three days they seem uninjured, and when the intestinal contents were removed, with every precaution to prevent contamination from the exterior of their bodies, the nature of which was confirmed by culture experiments and the obtaining of the red culture reaction by the addition of acids to beef-tea culture. If the common house fly is able, without injury to itself, to carry and transmit the cause, of cholera, its agency in the extension of epidemics is probably important and may be difficult to combat.—*Phila. Polyclinic.*

THE DOSE FOR CHILDREN.—Dr. Griffith gives the following as the best scheme known for ascertaining the dose for children. It obviates all guessing at weight, etc., so objectionable to the other rules:

Adult	I
18 years.....	$\frac{3}{4}$
12 "	$\frac{1}{2}$
8 to 10 "	2-5
6 "	$\frac{1}{3}$
4 "	$\frac{1}{4}$
3 "	1-5
2 "	1-7
1 "	1-10
9 mo. (9-12) "	1-15— $\frac{2}{3}$ the dose for one year.
6 mo. (6-12) "	1-20— $\frac{1}{2}$ " "
3 mo. (3-12) "	1-13— $\frac{1}{3}$ " "

—*Montreal Pharm. Journal.*

Letters.

NEW YORK LETTER.

NEW YORK, Jan. 20, 1896.

To the Editor of the Dental Digest,

MR. EDITOR:—The combined attractions of the month of January are now a matter of record. The First District Society had a largely attended clinic, and much of interest was brought out. Cataphoresis was the most emphasized and a successful demonstration was given. The Society meeting was a success in numbers, New York, New Jersey and Brooklyn having largely turned out, and the collation following was fully up to good form. Dr. Crouse was a decided object of attraction, and the outcome of the Tooth Crown litigation had opened all ears. He specially emphasized the need of funds and left the impression that if the profession did not wish to be protected, in the end it might not be, but simply the members of the Protective Ass'n.

Dr. Geo. Allen gave a paper of quite a good character—"The Contour, a Study." The most suggestive idea was the need and the possibility of a permanent aseptic condition being produced in cavities. This emphasizes the need and demand for a dental chemist, which will doubtless be a product of the future. We do not know all there is to be known.

The meeting of the Odontological Society was favored with the unusual attraction of Dr. Black. He is certainly a very fertile worker and all must admire his industry. He brought out what we deem a very suggestive and hopeful thought—that the present need was the study of the relation of the fluids of the body to the decay of teeth, and he predicted that this will be understood in the future. What more attractive field for investigation could offer itself to an ambitious and intelligent young practitioner? Our calling is not all written up, far from it. There was a large and attentive audience to listen to Dr. Black, which was a compliment to a worthy co-worker.

The Odontological will inaugurate a new feature next month, viz., clinics of a "high order" from four to six P. M., so stated by the executive board. It looks a little as though competition will

be an incentive to bring out the best. Three societies are now in the field, and why not? There is work enough for all. Although sixteen have resigned from the Odontological, we are quite sure that harmony will be begotten and many useful things achieved.

The Stomatological Institute is to revive the former plan of meeting at different offices and having a modest supper afterward. This insures a decidedly social atmosphere.

Dr. Carr occupied his new position, President of the O. S., for the first time at the January meeting. Dr. Northrup has stepped out of all official services. His cup has been liberally filled by his fellows and he can do this cheerfully and gracefully. He has had a long and honored career, more than falls to the lot of most men.

There has been a bit of legal breeze over the retroactive feature of the new dental law. As it is construed, *no one can come from another state and practice without a legal permit.* Dr. Younger ran against this snag by coming to New York and announcing to practice a specialty for a few weeks. Now is this retroactive feature of the law constitutional? Many would have been glad if so prominent a practitioner as Dr. Younger could have tested it. There are various rumors concerning the outcome, and a little time will probably develop the status of things. Dental legislation is not yet perfected.

Dr. Baylis, formerly well known in New York, committed suicide after a varied life. He was worthy of a better ending, as man is above the animals and should not live and die like the brute creation.

Cordially, NEW YORK.

A SINGULAR ACCIDENT.

LYNN, MASS., Jan. 10, 1896.

To the Editor of the *Dental Digest*,

DEAR DOCTOR:—I send you a report of an interesting case which came under my notice. Oct. 11 I was called to see Mrs. A., who, four days previous, while in a spasm (puerperal eclampsia) had caught three lower anterior teeth outside her upper teeth and split them off, together with the outer aspect of the alveolar process. The three teeth were freely movable collectively, but not

individually. The mouth was in a terrible condition; every time she closed her jaws the upper teeth came inside the lower ones and pressed the whole fragment out. She had to keep something between her teeth all the time to keep them from coming together.

I took an impression with patient lying in bed, as she could not even have her head raised. Made an interdental splint and fitted it to lower jaw, and opened the bite so that it was impossible to touch the upper and lower teeth together. Had a band go around the three teeth with a little hook to come from the band up over the cutting edge of each tooth, and a screw in each end of the band. Had nuts set in the vulcanite just back of the second bicuspids. When splint was in position I pressed the fractured part in as close as the patient could bear it, then slipped the band over teeth and screwed up tight; left instructions with the nurse to take out splint and keep clean. The metal parts irritated the mucous membrane, but this was easily overcome by wrapping a little cotton over the parts and giving a mouth-wash of listerine.

As soon as the splint was in place the patient expressed great relief, both mentally and physically, for she knew that she could not bite the upper teeth into the fracture, and she had no more pain. In four days the teeth were almost in place. I had some trouble in getting the fragment in straight, as one end moved much easier than the other, but as there was a screw at each end the difficulty was easily overcome by applying nearly all the force on one screw.

I saw the patient two months later and her mouth was all well. She insisted on wearing the splint long after it was necessary, her argument being that we did not know how painful her mouth was and she wasn't going to run any risk whatever of breaking that fragment out again.

Yours truly,

M. C. SMITH.

A TELLING BLOW.—Another bulwark of bacteriology is gone. The primary postulate upon which the fledgling science chiefly rested was, that a specific germ causes a specific disease. Now, recent investigations show that so-called specific germs may be found anywhere in the body, without regard to the nature of the lesion, if their natural pabulum, dead tissue, exists.—*Medical Age*.

The Dental Digest.

PUBLISHED THE

TWENTIETH DAY OF EVERY MONTH.

Editorial.

THE SUIT ON THE VALIDITY OF THE LOW BRIDGE PATENT—INTERNATIONAL TOOTH CROWN COMPANY VS. ALLEN G. BENNETT.

This suit was argued in the Circuit court of the United States, Eastern District of New York, last week, January 14-17, before Judge Wheeler, and is now in his hands, and we shall know in a few weeks at most what his decision is. Until this decision is rendered it would be folly to predict what it will be.

It is well known to our readers that the Dental Protective Association took charge of and conducted the defense in this suit. In fact, the Association has conducted all the defense in the various suits brought by the Crown Co. against its members since its organization eight years ago.

We have tried in every way possible to get a trial and decision on the validity of this Low bridge patent in any other Court or Federal District than the one in which it was tried, for the reason that this patent was sustained by Judges Wallace and Shipman in this same Federal Circuit before the Protective Association was formed, so we have made every effort to force a trial elsewhere. We have filed answers and in some cases got the Court to set and limit the time when the Crown Co. must have their testimony all in. In this way we have driven them out of all the other Federal courts in the country where they had commenced numerous suits against members of the Association, and nowhere would they stay and test the validity of their patent. But, before time for trial, they would pay the court costs and travel until they reached

this circuit, where they had had a favorable decision, and we could do nothing else but give it as good preparation as possible and await results.

Although we have additional testimony and an altogether new record, the Crown Company and their attorneys are expecting to win the case. They are relying on the proposition that Judge Wheeler will not reverse the decision formerly given by Judges Wallace and Shipman, because this is not the court or district over which he ordinarily presides. Judge Wheeler resides at Brattleborough, Vermont, and comes out of his circuit to sit in the Brooklyn court upon the invitation of his superior judges, and they think it would be a delicate matter for him to reverse the decision given by Judges Wallace and Shipman. It is on this supposition that they feel sure of winning the case or securing a refusal to reverse the decision of the other judges.

We were present at the hearing and argument of this case, which consumed nearly four days, Jan. 14-17. It is unnecessary for us to say that we do not entertain the same opinion as to what the decision will be as does the Crown Company.

As we intend giving a concise history of all the litigation conducted by the Protective Association, we will not go much into the details of this suit at present, suffice it to say our defense consisted of three distinct propositions. First, denying the complainants (Crown Co.'s) title or right to bring suit upon the Low bridge patent, because Low did not make a complete assignment, but reserved the controlling interest. That is, the agreement or assignment of the patent by James E. Low to the International Tooth Crown Company was not completed nor legally executed, because the signatures of neither Low nor the witnesses were properly proven, and because two papers or contracts are spoken of in said assignment and but one was produced. Very briefly these are the main points in the first proposition. Our attorneys prepared a separate brief on this.

Second, our proposition was that Low's first application for a patent was not for a bridge, but for a method of securing teeth permanently to bands and screws, the plate or teeth pressed firmly to, and resting on the gums, so no secretion could get underneath. The object of the bands was to keep the denture from dropping out, but the bearing and force of chewing was all to be

secured from the gums. After many letters had passed between Low, his attorney, and the Patent Office, which correspondence continued two years, his application was rejected and abandoned, and another application was made for a method which designed that all the force of mastication should be secured from the adjacent teeth by continuous bands around them, secured by cement. The artificial teeth thus inserted to be absolutely free from the gums, an entirely different method. This second application was not made until 1880, and before that time teeth secured free from the gum and attached to bands or crowns were in common use, and only after seeing such dentures did Low conceive the invention of the method now in controversy.

Third, our proposition was that Low was not the inventor nor the first to introduce bridge-work of the kind claimed in his patent, nor was it a useful device as described in his patent. The evidence on these various points is made up from a large record.

The important part of this litigation will be presented in our history in the DIGEST during the coming months.

THE STRENGTH AND INFLUENCE OF THE DENTAL PROTECTIVE ASSOCIATION APPRECIATED BY OUR OPPONENTS.

At the opening of the argument of this last case, one of the council for the International Tooth Crown Company called the attention of the court to the fact that it was not Allen G. Bennett, the defendant, that was conducting the defense, but that it was the Dental Protective Association of the United States. His remarks in substance were, that nothing could be said against Dr. Crouse, the president and manager of the entire organization, as he was honest, straight-forward and capable, yet he had thrown the whole strength of the Association, which was a powerful organization, against his (the attorney's) clients' claims, and with the influence of the Association had destroyed the income of said clients, which would have amounted to a large fortune. He also said that before his company had gotten fully started, less than a

year after it was organized, the income of Sheffield and the Crown Co. amounted to ninety thousand dollars (\$90,000), and the work of the Protective Association had reduced it to almost nothing, to less than two thousand dollars per year.

In closing, the other attorney for the Crown Company said that there never was a suit that was fought so skillfully as this, as this powerful organization, the Dental Protective Association, with its large membership was able to bring the influence of the dental profession of the entire land against his clients' claims.

In reply to this our attorney, Mr. Offield, said, in substance, and we wish we could give the eloquence with which it was said: "The record defendant in this case is a dentist, Dr. Allen G. Bennett. As a matter of fact, however, Dr. Bennett is defended by an association of dentists known by the associate name of 'The Dental Protective Association of the United States,' whose chairman is Dr. J. N. Crouse, of Chicago, Ill. The defense having been primarily organized under the authority and direction of Dr. Crouse, he having had substantially the organization and control of the defendant's record in this case as here present.

"We take it that the substantial defense of this individual defendant dentist by his fellow dentists under the associate organization, as above indicated, is a matter clearly justifiable and defensible under the necessities and the antecedent facts of this case.

"The complainant is a corporate organization, such corporate organizations usually representing such aggregations of capital, influence and wealth as to place at a disadvantage any individual litigant whose property it may attack. Especially is this the case when such conditions are applied to the dental profession of the United States. The dentists of the United States, as is a well known fact, and so well known, we believe, that the court will take judicial cognizance of the same, are without wealth, and with but fugitive pecuniary resources. They are obliged, if they retain their practice, to keep up a certain semblance of prosperity, both as to their office and social environments. They may live well, but they certainly die poor, and of all classes and conditions of men who earn their own livelihood, an individual dentist is the least able to defend a patent lawsuit, brought by an aggressive corporation and backed by distinguished counsel, for instance,

such as is represented by the complainant corporation and its counsel in this case.

"As a matter of judicial history, no other class of men, profession, or industry in this country has suffered so continuously, ruthlessly, and mercilessly, as defendants in patent litigation over a long series of years, as these self-same dentists and their oftentimes precarious practice. The records of this court, and of every Federal court of the United States for more than fifteen years recently passed, have been literally placarded with suits in a continued and unbroken succession, brought by the erstwhile "Goodyear Dental Vulcanite Company" upon the Cummins patent. Millions of dollars were extorted from the dentists during that time under this patent. Thousands of dentists were ruined financially, and buried under great judgments and costs for all time by these multitudinous suits, and that too upon a patent only finally sustained by a doubting majority of the Supreme Court of the United States, and moreover, a re-issued patent, that had that court then applied the doctrine of *Miller v. Bridgeport Brass Co.*, 104 U. S., 350, would not have lived an hour, and would have been declared as invalid and worthless as the patent in the case last cited.

"Under the above conditions and circumstances, we do not think that either in legal ethics or commercial morality there can be any adverse criticism passed upon the organized body of dentists defending this case, but, upon the other hand, that such mode of defense is creditable in the highest degree to that profession and its members."

News Summary.

NOTICE.—An article on ANCHORAGE, by Dr. J. N. Farrar, New York, will appear in the February DIGEST.

AN OMISSION.—In preparing the lists of members of the Dental Protective Association, the name of Dr. F. H. Robinson, Aurora, was omitted from the Illinois list.

FOR SALE.—A well-established, first-class dental practice in a city of 260,000 inhabitants. A splendid chance for a good operator. Inquire of DENTAL DIGEST.

CORSETS.—Marchland says gallstones in women are a not infrequent sequel to the pernicious habit of tight lacing.

ARTICLES CONCERNING THE D. P. ASS'N.—In the December DIGEST we started the history of the litigation conducted by the Dental Protective Association. This history will be continued in the DIGEST during 1896.

SUIT FOR BROKEN ENGAGEMENTS.—A reader wishes the following to be inserted: Will the profession please send to the DENTAL DIGEST the full title of any legal case in which a charge for broken engagements has been involved, and which has been brought to a decision in any court above a justice court.

ST. LOUIS DENTAL SOCIETY.

The following officers have been elected for 1896: President, F. F. Fletcher; Vice-Pres., J. S. Coyle; Treas., A. J. Prosser; Cor. Secy., J. G. Harper; Rec. Secy., P. H. Eisloeffel. Com. on Ethics, W. M. Bartlett, P. H. Morrison, T. L. Pepperling. Com. on Publication, DeCoursey Lindsley, Wm. Conrad, J. P. Harper.

A DENTAL ANTISEPTIC.—Dr. Barrie Milligan, Chicago, writes, "Some time ago my attention was called to Borine, and since that time I have used it constantly. Locally on cotton to diseased cavities and as a wash for soft and unhealthy gums, and without exception it has proved itself an antiseptic quieting and healing in its action. I highly commend it in all dental operations requiring such an agent."

Dr. Milligan is but one of many dental surgeons who have borne testimony to the fact that Borine fulfills all that is justly claimed for it. In all inflammations of the mouth and gums it destroys all septic conditions and imparts a healthy reaction to all tendency to pyorrhea alveolaris in its first symptoms. It is an ideal dental antiseptic.

CHRONIC NASAL OBSTRUCTION.—Mr. Mayo Collier, in a recent address, said that nine out of ten civilized persons have some irregularity or abnormality of the nose, and that four out of five savages, aborigines, or uncivilized beings have normal nasal cavities. The speaker is of opinion that such deformities are brought about by atmospheric pressure in association with partial obstruction, and he disagrees with Trendelenberg, who has pointed out the frequent association of highly arched palates and crowded irregular teeth with nasal obstruction, and believes that the palate pushes up and deforms the septum. Mr. Collier asks what pushes up the palate, and insists that the same incontestable force (atmospheric pressure) that pushes in the septum must, of necessity, push in the hard and soft palate, and there is no help for it. It would be contrary to the laws of nature if it were not so. Will not this theory account for the saddle-shaped arch in mouth-breathers?—*Brit. Jour. Dent. Sc.*

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